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Editorial

This first issue of volume 8 collects some of the papers originally presented at the 11th MOISA meeting held at the University of Reading, UK, in July 2018 and devoted to music archaeology, an emerging research topic that deals with the material evidence of ancient musical cultures. After an overview of the whole conference by one of its organizers, James Lloyd, some examples of the broad and multifaceted approach to the topic of ‘materiality’ in Greek and Roman musical antiquity are presented: two papers (by Stelios Psaroudakēs and Vassiliki Milona) are devoted to an outstanding archeological find in Athens in the area between the so-called ‘Eriai’ Gates and the Dipylon, where two musical instruments, a lyre and an *aulos*, were found in a grave of the Classical period. These contributions, focusing on the interpretation of the organological details of the instruments and their conservation, are followed by an article by Carolyn Laferrière on the visual representations of Apollo *kitharōidos* on late Archaic Attic vase-painting, which discusses their cultural and symbolic meanings interwoven with the emergence of important musical concepts.

The next two papers turn to the topic of music and the divine, which was the theme of a panel organized by MOISA at the 150th Annual Meeting of the Society for Classical Studies, held in January 2019 in San Diego. After an introduction by Andreas Kramarz—organizer of the event—defining the subject and summarizing the topics discussed, the contribution of Pavlos Sfyroeras examines the use of music in Greek sacrificial ritual and the function it played in the relationship between gods and human beings. The issue continues with two papers on theoretical issues. The first, by Tosca Lynch, explores the connections between Plato’s harmonic imagery and the technical discussions of lyre tunings in the *Republic*, showing how the model sketched there informs the musical structure underlying the construction of the World Soul in the *Timaeus*. In the following contribution, I examine the importance of the notion of *synthesis* within Aristoxenus’ thought and its reception in later authors, focusing on the permeability between musical and rhetorical theories.

The last three papers are reports of important scholarly events. Two of them are international conferences which occurred one year apart (the former in Vienna in June 2018, the latter in Fribourg, Switzerland, in June 2019) and focused on ancient dance, a burgeoning field of study that is finally finding its

own identity and autonomy within the broader topic of music (as the informative and reasoned reports of Laura Gianvittorio and Karin Schlapbach well show). The closing piece, by Timothy Power, reviews a production of Euripides' *Herakles* staged in New York by Barnard Columbia Ancient Drama on the basis of an historically informed musical score, showing the vitality of the research topic of ancient music well beyond strictly scholarly purposes.

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Music and Materiality

An Overview of Ancient Greek and Roman Music Archaeology

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Abstract

On the 20th to 22nd July 2018 the 11th MOISA International Conference was held at the University of Reading, organised by Ian Rutherford, Donatella Restani and James Lloyd. Nineteen papers were presented, all engaging with the theme of ‘Music and Materiality’. This report explores the areas where future research on music and materiality might prove fruitful, as evidenced by the rich and varied set of topics and methodologies presented during the conference.

Keywords

materiality – music archaeology – iconography – methodology – organology

1 Introduction

There are a variety of research projects, networks, and groups which explore what we might broadly call ‘music archaeology’, and the study of the material evidence of ancient Greek and Roman Music has featured heavily in previous MOISA conferences, as well as in the pages of this journal.¹ Despite this, there had not been a MOISA conference dedicated to how we study and might better understand ancient music through material evidence. As such,

1 On music archaeology in the context of ancient Greek and Roman music, see Castaldo 2015.

this report presents the papers given at this conference, drawing on the key themes of each, acting as a summary of the state of research in the field and highlighting the areas which will likely prove fruitful for future studies of ancient music.

But what is materiality, and how does it relate to the study of ancient music? On one level, materiality is the creation of things; it is also how societies engage with the material world, and the theories behind those societies' creation and interaction with things, stuff, objects, material culture.² In the context of this conference, music and materiality alludes to our study of an act which was primarily intangible (musicking) through the tangible evidence for that act (iconography, organology, archaeology, epigraphy, etc.), and the problems that this presents. Due to way that because material culture reflects the wider culture of the society which created it, most of the papers fell into three panels, organised by region. There were also two panels which focused on material approaches to specific instruments, and another two panels explored new finds and approaches.

1. *Auloi*
2. Approaches to Roman Music
3. Approaches to Apulian Music
4. Approaches to Attic Music
5. Percussion
6. New Finds
7. New Approaches

There was also an *aulos* reed making workshop, led by Callum Armstrong, and a concert of ancient Greek music performed by Barnaby Brown and Stef Conner.³ Both events highlighted the importance of continued performative engagement with ancient music, and a temporary exhibition at the Ure Museum of Greek Archaeology curated by the author showcased several instruments and iconographic examples.

While many of the papers looked at iconography, they often focused on vase paintings, meaning that the iconography of other media was underrepresented. So too was the study of space and place underrepresented. In this regard, Prof. Till's keynote lecture provided much to think about, revealing

² Miller 2005, 4.

³ Recordings of the concert, with English closed captions can be found on YouTube. For the Delphic paean by Athenaios Athenaiou, <https://youtu.be/SgpWXdSSHEo>. For the explanations and other performances, <https://youtu.be/FsIZznIKQgM>.

archaeoacoustics as a field of study with much to offer for the study of ancient Greek and Roman Music.⁴ Prof. Till's work on archaeoacoustics has included studies of the Hal Saflieni Hypogeum on Malta, the relationship between Palaeolithic cave art and cave acoustics, and Sudanese rock gongs.⁵ While these studies might sit outside the conventional boundaries of what we study as ancient Greek and Roman music, they provide deeply informative perspectives concerning the potential influences of physical space in the production of music. Prof. Till's keynote provided an overview of the history, methodologies, controversies, and applications of the field. When we think of the study of material evidence for music in the ancient world, we often turn to the remains of instruments and iconographical representations. Prof. Till showed that we should seriously consider how performance spaces affected ancient performances. Of particular interest were the digital 3D soundscapes which Prof. Till had created as part of the EMAP project, especially that of the Hellenistic theatre at Paphos, Cyprus.

2 *Auloi*

In his paper Theodor E. Ulieriu-Rostás expanded on his previous work on music and iconography, by presenting a detailed analysis of how a group of Attic red figure painters depicted *auloi*, paying close attention to incisions and slip, and revealing the often-imprecise nature of these depictions.⁶ Ultimately,

4 For the importance of comparative methodologies in the study of ancient Greek and Roman music, and in music archaeology more generally, see: Sachs 1943, *passim* (which remains an important, if not in part outdated, study); West 1992, 3; Psaroudakēs 2003; Both 2009; van Keer 2010; Hagel 2010, xvi.

5 Till 2017, 74-89, underlining the extent to which acoustics would have been an important consideration of those who built the Hal Saflieni Hypogeum, and providing a methodology for archaeoacoustical studies. Also, Till 2014, 292-304; Fazenda et al. 2017, which found that, with caveats, sound (resonance in particular) could have influenced the placement of Palaeolithic cave art. In a study of a rock gong which was located among Kerma period (c. 2500-1500 BC) graves near Dar en-Njoum, acoustical analysis was able to inform how the gong might have been used: "a single strike produced a short ring, but a series of strikes, perhaps two per second, allowed resonances in the stone to build up and become more sustained. They did not fade away, and a mid-frequency shimmer and low frequency rumble/hum were both audible ... This information suggests that the rock gong is most effectively played with repeated strikes, and perhaps with multiple players" (Kleinitz, Till, and Baker 2015, 113).

6 In particular, Ulieriu-Rostás 2013.

he argued, we need to consider the wider corpus of the artist and genre before judging what an iconographic *aulos* might reasonably tell us about the instrument. In the first part of his paper, Caleb Simone explored how accounts of *aulos* reeds focus on the effect of a reed's materiality, and how that relates to the quality of music it produces. By way of Aristoxenus' description of the physical tuning of an *aulos* (*Elementa harmonica* 2.41-44), Simone explored how the materiality of an auletic performance was encoded on a famous Corinthian aryballos.⁷ But when is a pipe an *aulos*, and when might it be a *monaulos*? For Sylvain Perrot, who presented research on a pipe in the Louvre museum, its identification as a *monaulos* rested on a number of peculiarities.⁸ Key among these was that it has two thumb holes and is rather small. Perrot presented the key measurements of the instrument, the scale it would have played, and discussed the quality of its workmanship, before then exploring the representation of *monauloi* in Classical literature, noting it was often described as small (*auliskos*) and how it was regarded by the Alexandrians as the invention of Osiris.

3 Approaches to Roman Music

Robert Rohland explored how Hellenistic and Latin non-musical sources sought to distil the intangible pleasures of music. Looking at the Seikilos inscription (*DAGM* 23), Rohland argued that the musical notation is not there to be performed, but by evoking the performative, actually embeds the message of the text: enjoy life while you can. This idea was further explored through the depiction of skeleton musicians on two cups from the Boscoreale treasure, and in Horace *Odes* 1.20, where the idea of musical storage was explored. Kamila Wyslucha also explored the topic of music and death, looking at the role of the trumpet in Roman funerary customs. Starting with the burial of Musenus, a *tubicen*, at Vergil *Aeneid* 6.212-35, Wyslucha then looked at a range of epitaphs and epigrams, and how they can reveal the lives (or deaths) of trumpet players in antiquity, in addition to the trumpet's funerary associations.⁹ Both of these papers showed the benefits of looking at a range of different media in order to better construct ancient ideas about the role of music.

7 Archaeological Museum of Corinth: C 1954-1. First fully published by Roebuck & Roebuck 1955.

8 Louvre Museum E 11747.

9 Wyslucha 2018, *passim*.

4 Approaches to Apulian Music

In contrast to Rohland and Wyslucha's papers, which explored in detail a small corpus of material evidence, Veronica Ikeshoji-Orlati ("Courtship Music? The Apulian *Kithara* in 4th century BC Apulian Vase-Painting") and Fabio Vergara Cerqueira ("The Iconography of the Harp in Apulian red Figure and Gnathian Vases (5th-4th cent. BC)") both presented research based on the study of larger datasets. Vergara Cerqueira offered an analysis of harps in Apulian and Gnathian vases, drawing on similarities and differences to present a large number of scenes, styles, and uses. For Ikeshoji-Orlati, the inclusion of kitharas in Apulian vases did not evoke their music *per se*, but their role as objects of heterosexual courtship (a role not obviously apparent in Attic depictions of the *kithara*). Both of these papers show that the iconographical and iconological examination of musical instruments is a fruitful area of study, a point which was further underlined in the next panel.

5 Approaches to Attic Music

The visual representation of musicking, musicians, and musical instruments has long been an important aspect of the study of ancient Greek and Roman music; despite this, there has not been a great deal of methodological discussion about how we study these images, and what we might reasonably be able to learn from them. Several papers at Reading showed how these discussions will be useful for future studies. One of these was Amy Smith and Katerina Volioti's paper, which focused on a selection of vases by the Haimon Group.¹⁰ By drawing on issues such as the modular creation of images and entangled materiality, they showed how musicians can be used to set a scene, and, in turn, how images on the vase other than the musician inform the viewer's interpretation of musicians and/or their musicking. Katerina Kolotourou looked at a rare Attic example of a depiction of the underworld found at Miletus.¹¹ Focusing on the interpretation of a tympanon-holding musician on the frieze, Kolotourou drew contrasts with the iconography of Attic white figure *lēkythoi*, where the deceased is often shown as a lyre-player, engaging with the role of percussion in funerary ritual and Greek religion more broadly. The idea that

10 E.g. Ure Museum of Greek Archaeology: no.s 25.6.3 and 29.11.2.

11 Berlin Antikensammlung Sk. 1627.

musical iconography would have been understood in non-musical terms was also explored in Egert Pöhlmann's paper, which looked at school texts, teaching, and music, as depicted in the works of the Attic vase-painter Douris. In a similar way to the entangled materiality discussed in Smith and Volioti's paper, and drawing on previous studies of Apollo *Kitharōidos*, Carolyn M. Laferrière explored three key concepts in the visualisation of Apollo *Kitharōidos* which were also shared as concepts of art criticism: *rhythmos*, *symmetria* and *harmonia* (see *infra* in this issue).¹² Laferrière suggested that the presence of these characteristics in Apollo's music are expressed through the composition of the scene, so that the artistic *harmonia* reflects the musical *harmonia*. All of the papers in this panel underlined the importance of viewing ancient musical iconography within the wider context of ancient attitudes to material culture and artistic creation, an area of enquiry which will likely continue to provide new insights into ancient music.

6 Percussion

Ancient percussion has not been as well served as other families of instruments by studies of ancient music. Both of these papers revealed how issues of localised musical traditions can be seen in regional uses of percussion. In Daniela Castaldo's paper, tong cymbals were examined from the perspective of Egypt and North Africa in late antiquity, drawing contrasts and comparisons with how the instruments are usually interpreted in Classical Athens.¹³ Important here was viewing the long-history of these instruments, from the 5th century BC to the 9th century AD, and exploring, for example, the iconography of mosaics and late antique tapestries. For Audrey Gouy, in their Etruscan context, castanets were seen to set a sombre and solemn context, with the musicians themselves possessing a ritual status. Here, a mix of iconographic sources were used, from details on *thymiatēria* and mirrors, to wall-paintings and ceramics, that pointed to the instrument's funerary associations. Both of these papers, in addition to Kolotourou's, went some way to challenge

¹² On Apollo and *harmonia*, see Bundrick 2005, 140ff.

¹³ Examples of tong cymbals include: British Museum EA26260 and Boston, Museum of Fine Arts, 06.2373-74.

traditional views of Graeco-Roman percussion (which place them within the context of Bacchic rituals and sympotic entertainment), touching on the need to explore the boundaries of ancient music, both in terms of geography and chronology, but also genre.

7 New Finds

This panel presented three papers on the discovery of the fragments of two surviving instruments, found in a grave as part of rescue excavations near the 'Eriai Gates' in Athens in 2007 (see *infra* in this issue). Stelios Psaroudakēs presented the research of Antonia Kokkoliou (on the context of the excavations), Vassiliki Mylona (on the conservation of the instruments) and his own (on the instruments' organology). This paper was particularly useful because it gave members of MOISA the chance to see the whole process of studying new archaeological finds. Of further interest was the proposal that a wooden rim might have been used to secure the skin of the lyre to its tortoise carapace soundbox, in turn raising interesting questions about iconographic representations of lyres. The importance of new finds for the advancement of studies of ancient music speaks for itself, but what was particularly important here was the documentation of the various processes of discovery, and how they each can add important information about the instrument, details which are often missing from the reports of instrumental finds published in the early 20th century.

8 New Approaches

Ellen Swift, Jo Stoner, and David Creese, as part of a the wider AHRC funded *Roman and Late Antique Artefacts from Egypt* project, presented research on the study, 3D scanning, and reproduction of musical instruments in the collection of the Petrie Museum. The instruments included a syrinx, clappers, bells, cymbals, and ceramic rattles. Key to this process was finding the scale of the syrinx, but also measuring the differing sound qualities of the percussion instruments. Manon Brouillet explored the ways in which the materiality of the lyre is constructed in archaic poetry, drawing on methodologies from anthropology and ethnomusicology, to show that the lyre did not just produce sound, but ritual meaning. Antonietta Provenza explored the role of the shared associations and language of sound and light in Dionysian rites as seen in

Pindar, *Dithyramb* 2 (fr. 70b S-M) and *P.* 3, drawing comparisons with descriptions of light and sound by Aeschylus, Sophocles, Euripides, and Aristophanes. Anna Conser presented innovative statistical analysis of pitch accent response in strophe-antistrophe pairs in Attic tragedy, showing differences and inconsistencies between authors, plays, songs, and even stanza pairs. Instead of trying to relate these differences to some musical trend (for example, the New Musicians), Conser instead explored when and how tragic authors did, or did not, write strophe-antistrophe pairs with pitch accent response.

9 Conclusions

There are three broad strands which seem to appear from the papers presented at the conference and that best highlight some interesting areas of current and future study. The first is the development of rigorous methodological approaches for the interpretation of musical iconography and materiality. The complexities of the artistic representation of musical performance and musical instruments is an area which needs further consideration. The second is that musical instruments can, and should, be studied beyond their traditional organological boundaries. Any given class of instrument did not need to have the same cultural meaning throughout the ancient world. The wider cultural values of musical instruments, especially as expressed through materiality, is an area which requires further examination. This leads to the third strand, the diaspora of ancient Greek and Roman music. Recent work has shown the importance of viewing the wider networks of knowledge that informed ancient Greek and Roman music, imagined or otherwise, and this will be a key avenue of further research, as shown by the number of papers which engaged with music and materiality outside the popular confines of Classical Athens and Imperial Rome.¹⁴

Based on the rich range of papers presented at this conference, the study of music and materiality will continue to be an important topic for future studies of ancient Greek and Roman music.

14 E.g. Barker 2018, *passim*.

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Lyre and *Aulos* from an Athenian Classical Grave in the Area between the So-Called ‘Eriai’ Gates and the Dipylon (Grave 48, 470–50 BC)

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Abstract

The remains of two musical instruments, a tortoise carapace lyre and an ‘early type’ *aulos*, were found in a grave of the Classical period (470–50 BC), outside the Athenian walls, in the area between the so-called ‘Eriai’ Gates and the Dipylon. In this paper, they are discussed in every significant organological detail and are compared with similar finds; and an attempt is made to reconstruct them verbally. Of special mention are: the elegant string holder of the lyre and the affinity of the *aulos* to some other significant exemplars.

Keywords

lyre – *chelys* – early *aulos*

1 Introduction

The tortoise carapace (Figure 7), the iron member found on it—pi-shaped like a string holder (Figure 16)—, the positioning of the shell along the left thigh of the deceased,¹ and the *aulos* sections found in the same grave (Figure 19), are enough indication that the carapace served, indeed, as the sound box of a bowl type lyre, either a *chelys* or a *barbitos*. Close examination of the carapace provided further, significant information, which not only re-enforced the identification of the find as a lyre but actually proved it. The young age

¹ See Kokkoliou in GRMS 8.2 (forthcoming).

of the deceased (11-13 years of age) and the fact that he was most probably a boy,² makes its identification as a *chelys*, rather than as a *barbitos*, more likely.³

2 The Lyre (Athens III)

2.1 *Carapace*

After the carapace plaques were dug out from the lump of soil in which they had been transported to the laboratory (Figure 1), they were cleaned, treated, and individually examined under the microscope, and the process of their fitting together began. It was decided that the carapace was of the *Testudo Marginata* land tortoise species, as was revealed by a comparison between the ancient and modern tail plaques, and those of the head side of the same species (Figure 2b). For identification purposes, the ten 'central' plaques of a modern carapace were named A, B, C, D, E, F, G, H, I, J, starting from the tail-end of the shell, corresponding to the top end of the sound box (Figure 3). For the two series of 'lateral' plaques, eight on either side of the central ones, the small letters a, b, c, d, e, f, g, h were used, while for the two series of 'lower' plaques, eleven of them on either side, with zero for the uppermost lower plaque, the Latin numerals i-xi were employed, again starting from the tail-end of the carapace (top of resonator).

It is worth pointing out that in a modern *T. Marginata* carapace the geometry of the central plaques D, E, F, G, H alternates between two characteristic shapes, that of a 'stretched leather' (D, F, H), and that of a 'barrel' (E, G), while the remaining central ones appear either as a 'trapezium' (A), or as 'ovals' (B, C, I). The lowest central plaque, the largest of them all (J), gives the impression that it comprises two parts: an upper 'rhomboid', and a lower 'butterfly' (Figure 2). The apparent divide is simply the trace left by the now lost keratinous foils, the scouts, tiny bits of which were detected in the soil. The lateral plaques assume the shapes of a 'near triangle' (a, h), a 'plectrum' (b), a 'finger' (c, e, g), and a 'bone' (d, f) (Figure 3).

The identified plaques were placed over a plan view photograph of the guide carapace (Figure 4), so that their affiliation with it could be observed. The surviving portions of the plaques were then penciled in onto a guide photograph

2 See Protopapa in GRMS 8.2 (forthcoming).

3 The *barbitos* is an instrument which seems to have been introduced to Athens late in the 6th c. BC, probably by Anakreōn, and which can be traced in the Athenian iconography throughout the 5th c. BC. It appears mainly in Dionysiac scenes of revelry (*kōmos*) and of symposia, and has erotic connotations. Very few instances of its use outside these contexts are attested. See Maas & Snyder 1989, 113 ff.; Mathiesen 1999, 252.

(Figure 5)—in red for the central plaques, in blue for the lateral plaques, and in yellow for the lower plaques. It was thus realized that a number of plaques were missing: central D and E; left lateral c, parts of lateral b, g, h, and lower iii to ix; right parts of lateral d and e, and lower ii to ix. All the remaining lower plaques have been inexplicably lost. A few small pieces, undoubtedly belonging to the carapace (and not to the skeleton), were too small to be identified, and so could not be placed into position (Figure 6).

2.2 *Central Hole*

Although some material of plaque F is lost along its frontier with (missing) plaque E above it, the remains of a small hole drilled into F are clearly observed (diameter 3.44 mm) (Figure 7). Such small holes at the apex of tortoise carapaces identified as lyre sound boxes have been located on a number of shells (Figure 8): Athens I/Acharnian Gate; Ephesos; Lokroi II (one hole only, at the apex); Bassai (three holes, one at apex, two lower down, symmetrically placed in respect to the longitudinal axis); Argos I (four holes, creating a cross pattern); Lokroi I (six holes arranged in an upside-down Y); Metapontion (ten holes, all along the spine of the shell).⁴ The apex plaques of Ambrakia I and Leukas are lost, hence we cannot tell whether there was a hole drilled in them in this region. I maintain my previously expressed belief that the apex hole was drilled so that the arm system could be anchored to the shell by a T-shaped system of wooden struts.⁵

2.3 *Peripheral Holes*

In a number of lyres, including the present one (eight out of seventeen), there is a series of small holes of practically the same diameter (3.4 mm) along the periphery of their shell and towards the edges (Figure 8). Athens I/Acharnian Gate has four, located in the upper right hand side arc only, and another four in the 'butterfly' (lower J); Ambrakia II has quite a few, all around its edges, top, bottom, and sides; two or three are seen towards the edges of poorly preserved Dēlos; Lokroi I has six along its upper curve, and seven along the bottom; Lokroi III has five, occupying the upper right hand side only, and the bottom line; on Lokroi IV four such holes are detected along the surviving portions of its periphery; the surviving bottom part of Taras II has them all along its edge. On the other hand, the remaining nine lyres have none: Ambrakia I, Bassai, Ephesos, Lecce I and II, Leukas, what survives of Lokroi II, Metapontion, and

4 For a concordance of the lyre carapaces discussed in this paper, see Appendix A, below.

5 See Psaroudakēs 2006, 63 No 2 for a discussion of the Athens I/Acharnian Gate carapace apex hole.

Poseidōnia 1. So, why is it that peripheral holes are found in some shells and not in others?

It has been suggested, and since then taken for granted in the bibliography, that a cord or thong might have passed through these holes, fastening the leather sound board onto the carapace and keeping it taut, as is commonly done with drums.⁶ However, these holes are erratically placed on the surviving shells, in some cases only on part of one side (e.g., Athens 1/Acharnian Gate, Lokroi 111); one would expect to find them all around the periphery of all shells (the big ones at least), if their function had been to assist in stretching the skin. Furthermore, from a practical point-of-view it is difficult to imagine how such a cord would have been sown in and out of these holes in the cases where the holes occupied the whole length of the rim (e.g., Ambrakia 11, Lokroi 1), while there is no sign of such ‘stitches’ in the extant iconography; the impression one gets of the back side of the resonator is of a very tidy leather margin covering the periphery of the shell; no sign of any sowing (Figure 9). Could it be then that something else had been attached to the rim of the shells, involving these holes, and which did not demand that holes were drilled all around their periphery?

Taras 1 provides us with an extraordinary piece of evidence (Figure 10):⁷ an iron lamella encircles the carapace and is attached to it by metal studs. The metallic rim rises higher than the shell by a substantial amount (about half of its width), increasing the volume of the sound box. Undoubtedly, the skin was stretched over this metallic ‘crown’.⁸ No traces of iron or rust have been found around our carapace nor inside the peripheral holes. It is, therefore, most unlikely in our case that the holes were used for the attachment of a similar metal contrivance. However, it is possible that a wooden frame was placed over the rim of the shell and attached to it by wooden pegs. These pegs may or may not have been visible on the back of the instrument, depending on whether they were covered by the skin, or emerging out of it. There is only one depiction of the back of the lyre with such ‘pegs’ showing through the skin that I have been able to locate (Figure 11).⁹

6 Φάκλαρης 1977, 226; Dumoulin 1992a, 106; Prohászka 1995, 149. Roberts (1981, 310) regards them as sockets for the insertion of small decorative pegs, similar to those on the African *kora*.

7 For a photograph of the interior see Bellia 2010, 99 fig. 30; Bellia 2012, 67 fig. 69.

8 Surprisingly, Taras 11 has the metal strip attached to the shell on the inside. For the Taras 11 lyre carapace see Bellia 2010, 99 fig. 31, and Bellia 2012, 68 fig. 70. Cf. Elia 2010, 415 n. 18.

9 Red figure hydria, Painter of the Yale Oinochoē, 480–60 BC. London—British Museum E178. Paris with *chelys*, Athēna, Aphroditē, Hēra. Mathiesen (1999, 240) implies he has seen a number of depictions of the *chelys* with peripheral holes painted in: “paintings of chelys lyres

It may be that a metallic crown was not suitable for the *T. Marginata* species, with its flat, fanning out, almost horizontal tail plaques, but appropriate for the more spherical *T. Graeca* or *T. Hermannii*, which also live in the country.¹⁰ It is possible that such a wooden frame is implied in the three-dimensional representation of the *chelys* (Figure 12).¹¹ No pins are shown along the skin rim, although it is possible that they were painted in and that the paint has now faded away. Landels (1999, 63f.), based on the available iconography, expressed the conviction that at some point in the evolution of the instrument a wooden frame was introduced, which was fixed to the shell by means of dowels:

The lyre body in the classical vase-paintings has ‘wings’ or ‘ears’ towards the top, and the arms appear to be fixed to them, and to extend no further down the front of the instrument. This leads me to suggest that these pictures represent a change in the construction, involving the use of a wooden frame, shaped on the outside as it appears in the vase-paintings, with the hide stretched over the front, but with an oval hole inside, into which the tortoiseshell was fixed at the back. The arms could have been fixed on the front surface by means of dowels. This arrangement would take all the stress off the tortoiseshell itself, and transfer it to the frame.¹²

If our theory is correct, the carapace-frame system would have the form shown in Figure 13.

2.4 *String Holder Holes*

There is no doubt that the two large holes (diam. 5.5 mm) drilled on either side of the lowest central plaque were meant for the string holder (Figures 2, 4, 7). Although they are not exactly symmetrically placed about the longitudinal axis of the shell, as would be expected, it can be proven that they held the lateral antennae of the tailpiece: when the string holder was broken away from the shell, some carapace material remained around the metallic fragments. That is why the holes are not round and are larger than expected. The two

sometimes show dots on the lighter-colored border surrounding the soundbox that may represent the edge of the oxide” (our emphasis).

10 See Psaroudakēs 2006, 60 with nn. 23-25 for a brief discussion of the three Hellenic species.

11 Marble, Kerameikos, mid 4th c. BC, Athens-National Museum 774. Siren with *chelys* (detail).

12 It must be noted that Landels envisages an independent frame-arms system, which requires no contact of the arms with the carapace. However, if this proposition is accepted, the ‘arm sockets’ (see section 3.6, below) become redundant.

detached pieces, preserving in them some of the metallic material of the string holder, fit very well inside the holes (Figure 14).

These are the first shell sound boxes discovered on which the tailpiece holes are not exactly centered. This feature raises the question whether this offsetting of one of the holes was done on purpose, or whether it occurred by accident. This raises another question: which hole was drilled first, the left or the right one? A look at the other surviving shells suggests that the string holder holes were more or less drilled symmetrically about the longitudinal axis. Good examples of this are Athens I/Acharnian Gate, Ephesos, Lokroi I, and Athens II/ 'Eriai' Gates Grave 63 (Figure 8).¹³ Some, little offsetting is observed on Ambrakia II, more pronounced on Lecce II; in the case of the latter the offset occurs upwards rather than sideways.¹⁴ Thus, I tend to think that the maker, having drilled the first hole, realized that the string holder was longer than he had thought, and so he was forced to drill the second hole further off the axis of the shell, in order for it to fit in.

2.5 *String Holder*

A number of corroded metallic pieces were found with the carapace. The decay pattern of the metal, and the fact that all pieces were attracted by a magnet, suggested iron as the material used. This was later proven by an electronic microscopic examination (SEM) and stoichiometric analysis. The SEM examination also confirmed our observation with the naked eye, namely that the side members of the tailpiece were tubular, i.e. hollow inside (Figure 15b).¹⁵ The three major pieces fitted together well; they formed the horizontal bar and part of the sideways prongs of the pi-shaped tailpiece (Figure 16). Two more small pieces were appended to one of the prongs, adding to its length and curvature. The other prong has unfortunately lost its extension. It was decided that the two 'roots' of the tailpiece should not be glued onto the prongs, as their cross sections didn't quite match when observed under the microscope; perhaps, some more material has been lost in between. Other structurally significant pieces of information provided by SEM are: (1) that the horizontal bar of the tailpiece was most probably of orthogonal cross section,¹⁶ as opposed to that

13 A publication by the present writer of the Athens II/ 'Eriai' Gates Grave 63 lyre is forthcoming (Psaroudakēs forthcoming a).

14 Because of degraded material, the following shells offer no information on the issue: Leukas, Bassai, Ambrakia II, Athens IV/Daphnē, Lecce I and III, Poseidōnia I and II, Lokroi II.

15 See Milona in this volume.

16 The Ambrakia II stringholder is also said to be of square cross-section; Φάκλαρης 1977, 223 with fig. 5. Compare Athens I/Acharnian Gate string holder; Psaroudakēs 2006, 70 figs 7, 8.

of the prongs, which was circular; (2) that the iron was forged, and (3) that the original diameter of the tailpiece was no more than 1 cm. Looking at the prongs on both sides, it was observed that their shape is not curvilinear all along: they are straight at one end, and after about 2.6 cm they begin to curve, bending upon themselves at almost right angles. Interestingly, the elegant shape of the string holder with the two peaks at either end, and a gentle inward curve on the sides, like a calligraphic π , is reminiscent of the string holder of the lyre played by the boy on the Boston Relief (440-30 BC) (Figure 15a).¹⁷

2.6 *Arm Sockets*

A number of surviving lyre carapaces possess a pair of large holes disposed symmetrically about the longitudinal axis of the shell, a little further up from the string holder pair of holes, which have been interpreted as arm sockets (Figure 8).¹⁸ The majority of these holes are drilled through the 'h' lateral plaques: Bassai, Lecce II, Lokroi I, Leukas, Poseidōnia I, Athens II/ Dipylon Grave 63. However, there are two shells which have these holes in their lower 'ix' plaques: Athens I/Acharnian Gate (Figure 17a), and Ephesos (Figure 17b). Since no such arm sockets appear on lateral plaques 'h' in our carapace (Figure 7)—enough material survives on the right hand side of the shell for us to be certain of this fact—we must conclude that in this shell, too, the arm sockets were drilled through the lost parts of the right and left 'ix' plaques.

2.7 *Conclusions*

Nothing of the other parts of the *chelys* survives: the arms (*pēcheis*) and yoke (*zygos*), the strings (*chordai*), the leather sound board, the bridge (*magas*), the tuning mechanism (*kollopes*), the wrist band (*telamōn*), the plectrum (*plēktron*) and its cord. The absence of any tuning pegs suggests that, if they had been provided for at all, they would have been made of wood, which perished together with all the other wooden parts. Had they been made of bone, we should have had some relic of them, since three bone *aulos* sections in very good condition, as has been mentioned, were retrieved from the very same spot of the grave. However, a close look at the string holder under the microscope revealed what is believed to be the trail of a gut string; even the lump below might be proven to be a gut knot (Figure 18). The material is certainly organic, relatively soft in comparison to the surrounding metal, but totally mineralized.¹⁹

17 Figure 15a is a photograph taken by the present writer in July 2018 of an exact copy of the Boston Relief in the Ure Museum of Reading University.

18 Psaroudakēs 2006, 64, section 6, holes M and N, with fig. 25 on 78.

19 Further examination may reveal more information.

A wooden frame was most probably fixed to the lip of the carapace with the use of wooden dowels, across which the leather sound board was tightly stretched, thus liberating the shell from any stresses and strains afflicted upon it by the taut skin, and providing a flatter membrane surface, thus enabling better contact with the bridge, and so a fuller and louder sound.

3 The *Aulos*

3.1 *The Find*

Only three out of the eight sections of an *aulos* of the ‘early type’ were retrieved from the grave, along with a few fragments (Figures 19, 20, 21).²⁰ Of the large pieces, one is a ‘type B’ section (‘extension’: without any holes in it, and placed immediately after the ‘type A’ *holmos-hypholmion* system), surviving in its entire length, and two ‘type C’ sections, (‘middle’: the central parts with four holes in them, named I, T, II, III), C₁ and C₂, one belonging to the right- and the other to the left-hand pipe, as can be clearly gathered by the opposing shifts of their thumbholes. These latter sections are not complete; they have both lost their upstream ends, down to their thumb holes. This means that the remaining five sections (two ‘type A’, one ‘type B’, and two ‘type D’) have unfortunately perished. Needless to say, no reeds have been recovered. All three surviving parts are of the same material and finish.²¹

3.2 *Section B*

Section B (Figure 22), an ‘extension’ section, is easily recognizable from its external trough, 5.28 mm wide, running round the upstream end of the tube (external diameter 1.41 cm), and at a distance of 1 mm from this end. Although the section is fragmentary, it survives in its entire length, which is 6.058 cm. The external diameter of the section is 1.50 cm (measured immediately after

20 The drawing of the *aulos* sections (Figure 20) was made by Andreas Kontonis, Artist, Archaeological Illustrator at the City of Athens Ephorate, to whom I would like to extend my thanks.

21 It is customary in early *aulos* studies to designate the tubular sections of a bone instrument as: ‘type A’ bulbous shaped *holmoi+hypholmia*, which receive the cane double reed; ‘type B’ or ‘extensions’, the second joints, having no holes in them; ‘type C’ or ‘middle’ sections, bearing holes I-T-II-III; ‘type D’ or ‘exit’ sections, having either one (IV), or two (IV-V) holes. Hole V is by necessity a vent hole, since the human hand possesses only five fingers, while there is no provision of any keys on this type of instrument. Wooden *auloi*, on the other hand, were made in only two parts (e.g., the Elgin *aulos* and the Daphnē pipe): the ‘type A’ reed receiver and the remaining body (sections B+C+D in one piece). See Psaroudakēs 2002; 2008; 2014, 118.

the trough), and the internal diameter (bore) is 1.016 cm. There is a socket 2.056 cm deep inside the downstream end, whose diameter is 1.286 cm. In the auletic record, a spigot is almost always provided at the downstream end of extension sections, which is to be inserted into the next, central, section.²² It is therefore probable that the central sections of this *aulos* carried spigots on both sides, a feature most unusual in the auletic record as regards central sections.²³ Unfortunately, the upstream ends of both central sections have perished. It remains to be decided whether the section under discussion belonged to the right or the left pipe of the pair, i.e. whether it is to be connected to one or the other of the surviving middle sections. There is a socket at the upstream end, 7.42 mm deep, and 1.234 cm in diameter, which would have held the 'neck' of the previous section. This feature is always present in extension sections.²⁴

Four closely packed decorative rings are incised near the upstream end, beginning at 1.69 cm from that end, and ending at 1.866 cm.

3.3 Section C₁

Section C₁ (Figure 23), the longer of the two 'middle' sections is 10.548 cm in (surviving) length. Its outer diameter ranges from 1.618 to 1.69 cm (measured between holes II and III), and its wall thickness is 3.5 mm (not constant all along the tube). It is broken at the upstream end, in the vicinity of hole I. Part of holes I and T survive. Holes II and III are intact, as is the downstream spigot of the section: length of spigot 1.138 cm; external diameter 1.246 cm; internal diameter 1 cm; wall thickness 1 mm. The upstream end most likely carried a spigot, which would have been inserted into the socket of the previous section (B, extension). The diameters of the finger holes (in mm) are as follows:

I (?) T (? longit., 8.6 across) II (8.0 longit., 8.98 across) III (8.0 longit., 8.68 across)

22 See, e.g., extension sections Perachōra G, I, J, K, L, M, N, Sparta G, Poseidōnia B_L, B_S. For a concordance of the *aulos* sections discussed in this paper, see Appendix B, below.

23 See, e.g., Pydna C_L, C_S, Agora D, C, Acropolis A, B, Braurōn, Korinthos F, G, Perachōra T, Sparta D, Poseidōnia C_L, C_S, Mannella (Reggio-Museo Archeologico Nazionale Inv. n. 5818). The only central section known to me with an upstream spigot is that of Lokroi Epizephyrioi Grave 1050. However, the existence of extension sections Korinthos J and Perachōra Q, R, with sockets on both ends, suggests that the (now lost) central sections connected to them had a spigot at their upstream ends.

24 All surviving extension sections have a socket at their upstream end: Korinthos J, Pydna B_L, B_S, Agora B, G, Lindos F, Perachōra G, I, J, K, L, M, N, O, Q, R, Sparta G. I shall argue below that items X and Y are likely to have been the downstream ends of the otherwise lost 'necks' of the *hypholmia*.

The distances between the holes, from edge to edge (in cm) are as follows:

	I	T	II	III	
(cm)		• ← 1.95 → 0 ← 2.106 → • ← 2.166 → • ← 0.516 →		operating end ²⁵	
		 6.406		
	 4.774			

The distances of hole centres from the downstream end (excluding the spigot) were measured (in cm) as follows:

	I	T	II	III	operating end
(cm)	9.45	6.80	3.85	0.90	0 (measured)

The thumb hole is slightly displaced to the left, about 13°, as seen looking down from the upstream end.²⁶ This clockwise shift of the hole indicates that the section belonged to the left hand pipe.²⁷ In the corresponding middle section C₂, the thumb hole is displaced in an anticlockwise direction: further proof that the two sections belonged to the same pair of pipes. The question whether this is the middle section which was connected to the surviving extension (B) remains to be answered.

3.4 Section C₂

Section C₂ (Figure 24), the shorter of the two ‘middle’ sections is 8.528 cm in (surviving) length. It is broken at the upstream end, in the vicinity of hole T. Part of hole T survives. Holes II and III are intact, as is the downstream spigot of the section: length of spigot 1.036 cm; external diameter 1.3 cm; internal diameter 1.048 cm; wall thickness 1 mm. The outer diameter of the section ranges from

²⁵ The ‘operating’ length of an *aulos* section excludes the spigot.

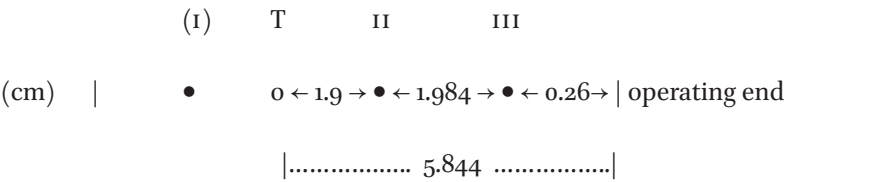
²⁶ Very many thanks to Andreas Kontonis, for carrying out this delicate task so patiently and accurately.

²⁷ It has been established that there exists a ‘4L’ rule as regards the relative sizes of the sections of an ‘early’ type *aulos* and their allocation to left or right pipe: ‘Longer sections belong to the Longer pipe in a pair, which is held in the Left hand, and is of Lower register,’ (Psaroudakēs 2008, 202). This rule can now be renamed as the ‘5L’ rule, by adding to the above expression ‘... and has its thumb hole displaced to the Left’.

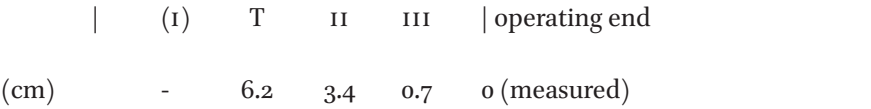
1.628 to 1.7 cm, and its wall thickness is 3 mm (not constant along the section). It is very likely—although not necessarily so—that the upstream end carried a spigot, which would have been inserted into the socket of the previous section (a ‘type B’, extension). The diameters of the finger holes (in mm) are as follows:

I (missing) T (? longit., 8.44 across) II (8.0 longit., 8.5 across) III (8.0 longit., 9.0 across)

The distances between the holes, from edge to edge (in cm) are as follows:



The distances of hole centres from the downstream end (excluding the spigot) were measured (in cm) to be as follows:



The thumb hole is slightly displaced to the right, about 13°, as seen looking down from the upstream end.²⁸ This anticlockwise shift of the hole indicates that the section belonged to the right hand pipe; in the corresponding middle section C₁, the thumb hole is displaced in a clockwise direction.²⁹ The question whether this is the middle section which was connected to the surviving extension remains to be answered. However, the fact that the centre of the thumb hole of this section is nearer the operating end of the section (6.2 cm) than the corresponding thumb hole of section C₁ (6.8 cm), is a strong indication that section C₂ belonged to the shorter pipe.³⁰ This observation is strengthened by the anticlockwise orientation of the thumb hole.

28 See n. 27.

29 See n. 28.

30 The same is true for the distances from the hole centres of II and III to the operating end: 3.4 and 0.7 cm, respectively, for section C₂; 3.85 and 0.9 cm, respectively, for section C₁.

3.5 *Fragments X and Y*

Two small fragments, here named X and Y (Figures 19, 20), were also retrieved from the grave. Undoubtedly, they are part of the *aulos*, as they are of the same material, colour and finish, and their curvature insinuates that they are most probably parts of cylinders. The largest of the two (X) is 2.342 cm long. Its wall thickness is 1 mm. Fragment Y is smaller (2.092 x 0.834 cm), but still recognizably cylindrical. Its wall thickness is also 1 mm. Although their similarity with the surviving downstream spigots of sections C, as regards wall thickness (1 mm), make them candidates for the lost upstream spigots of these sections, their lengths (2.342 and 2.092 cm) raise second thoughts about this identification. It is quite possible that they come from the downstream ends (the ‘necks’) of the lost ‘type A’ sections (Figure 20), the *hypholmia*, since their lengths exceed the depth of the downstream socket of B (2 cm).³¹ This excess of X is evident in the close up photograph of Figure 25.

3.6 *Comparisons*

In the auletic record comparable to C₁, with respect to distance from thumb hole centre to the downstream operating end, is Korinthos G (6.8 cm)—also a left-hand pipe section (Table 1). Next best matches are: Pydna C_L (6.736 cm), Acropolis A (7.1 cm)—of which the thumbhole shift is, however, unknown—and Poseidōnia C_L (6.418 cm).³² Lokroi—whose thumbhole shift is unknown—is, obviously, an instrument with its holes more spaced out.

TABLE 1

B C												operating end (measurements in cm)
		I		T		II		III				
?		9.450 ^{2.65}		6.800 ^{2.95}		3.85 ^{2.95}		0.90 ^{0.9}		0		C ₁ /L
13.05	^{3.75}	9.300 ^{2.5}		6.800 ^{2.7}		4.100 ^{3.1}		1.00 ¹		0		Korinthos G
13.3	^{3.55}	9.75 ^{2.65}		7.10 ^{3.2}		3.90 ^{3.1}		0.80 ^{0.8}		0		Acropolis A
12.858	³	9.856 ^{3.12}		6.736 ^{2.643}		4.093 ^{3.013}		1.08 ^{1.08}		0		Pydna C _L
12.074	^{2.8}	9.274 ^{2.856}		6.418 ^{2.62}		3.798 ^{2.824}		0.974 ^{0.974}		0		Poseidōnia C _L
15.00	^{3.6}	11.40 ^{3.4}		8.00 ^{3.4}		4.60 ^{3.4}		1.20 ^{1.2}		0		Lokroi Epiz.

31 One of the two Poseidōnia *hypholmia* (A2) has a wall thickness of 1.28 mm at its downstream tip, a comparable value. See Psaroudakēs 2014, 119.

32 For measurements of Poseidōnia C_L, see Psaroudakēs 2014, 120.

Whether the surviving extension (B) belonged to the long or the short pipe is still unknown. Its operating length is identical with that of Perachora K (6 cm), and approximately equal to Pydna B_L (6.416 cm). As B is similar to B_L of Pydna, and C₁ shows a disposition of holes very close to that of Pydna C_L, I propose that the present B is a B_L, i.e. a member of the long/left pipe, to be jointed to C₁, which, as has already been established, also comes from the same, long pipe of the *aulos*. The long/left pipe can, therefore, be partly reconstructed as follows:

Long/left pipe: A_L-]B-C₁[-D_L
Short/right pipe: A_S-B_S]-C₂[-D_S

A comparison between C_{2/S}, Pydna C_S, and Poseidōnia C_S (Table 2) shows that C₂ and its Poseidōnia counterpart are very near indeed.

TABLE 2

B C												operating end (measurements in cm)
		I		T		II		III				
		?		6.2	2.8	3.4	2.7	0.7	0.7	o		C _{2/S}
11.952	2.707	9.245	2.512	6.733	2.554	4.179	3.038	1.141	1.141	o		Pydna C _S
11.6	2.842	8.758	2.344	6.414	2.75	3.664	2.88	0.784	0.784	o		Poseidōnia C _S

3.7 Remaining Fragments

As regards the remaining fragments (Figure 21), it has not been possible to establish any connections between them. The top three fragments in Figure 21 (a, b, c) possess sockets 1.088, 1.13, and 1.12 cm deep respectively. It is very probable, therefore, that they belong to the two lost ‘type D’ sections (‘exits’): the depths of these sockets match well the surviving downstream spigots of the C sections (1.138 cm for C₁, and 1 cm for C₂).

3.8 Conclusions

It is lamentable that five out of the original eight sections of an early type *aulos* of splendid craftsmanship have perished, for the instrument seems comparable in size, hole disposition, and, most probably, similar tonality to other significant *auloi*, such as the Poseidōnia and Pydna instruments, and the well preserved central sections Korinthos G, and Acropolis A.

Acknowledgement

I would like to express my thanks to the Ephorate of Antiquities of the City of Athens for granting me permission to study and publish the two musical instruments of Grave 48, and especially archaeologist Antonia Kokkoliou for consenting to it. Vassiliki Milona, Conservator at the Ephorate, was of constant help and inspiration to us throughout our long, fruitful collaboration in the various stages of preparation of this publication. I extend my sincere thanks to them both. I would also like to express my thanks to Eleni Kouma, Conservator at the Laboratory of Panos St for the offer of Figure 15b, and Eleni Servetopoulou, Archaeologist at the Laboratory of Melidoni St, for her friendly reception during my study of the *aulos* there. Manolis Pissarakis' help with matters electronic was decisive in preparing a number of figures.

Appendix A: Lyre Carapaces Mentioned—a Concordance

- Ambrakia I / S.E. cemetery / Arta-Archaeological Museum AE5646 / 5th c. BC
 Ambrakia II / Koutsomyta cemetery / Arta-Archaeological Museum AE1179 / Classical
 Argos I / S. Sanctuary apothetes / Argos-Archaeological Museum, Find no A56-U14.1 / late Archaic
 Athens I / Acharnian Gate Grave 109 / City of Athens Ephorate / 450-25 BC
 Athens II / 'Eriai' Gates Grave 63 / City of Athens Ephorate / 500-470 BC
 Athens III / 'Eriai' Gates Grave 48 / City of Athens Ephorate / 470-50 BC
 Athens IV / Daphnē Grave II / Peiraias-Archaeological Museum / 430 BC
 Attica / Grave / London-British Museum (Elgin Collection) GR1816.6-10-501 / 5th-4th c. BC
 Bassai / Temple of Apollo / Olympia-Archaeological Museum Δ829 / prob. 500-450 BC
 Dēlos / Dēlos-Archaeological Museum
 Ephesos / Ephesos-Archaeological Museum
 Lecce I / Roca-Fondo Ospizio Grave 10 / Lecce-Museo San Castromediano inv. 5093 / 4th c. BC
 Lecce II / Roca / Lecce-Museo Provinciale San Castromediano inv. 3793 / 4th-3rd BC³³
 Lecce III / Muro Leccese / Lecce / prob. 4th c. BC³⁴
 Leukas / N. cemetery / Leukada-Archaeological Museum AE2657 / 500-450 BC
 Lokroi I / Luciferro Grave 1143 / Reggio-Archaeological Museum inv. 5019 / 400-350 BC
 Lokroi II / Luciferro Grave 684 / Reggio-Archaeological Museum inv. 11530 / prob. 400-350 BC

33 Castaldo 2008, 426, fig. 4 (photograph exterior); 427, fig. 6a (photograph interior).

34 Castaldo 2008, 423, n. 4; 2012, 63.

- Lokroi III / Lucifero Grave 730 / Reggio-Archaeological Museum inv. 113264 / prob. 400-350 BC
- Lokroi IV / Lucifero Grave 1290 / Reggio-Archaeological Museum inv. 113297 / 6th/5th c. BC
- Metapontion / Pantanello Grave 336 / Metaponto-Archaeological Museum / 450 BC
- Poseidōnia I / Tempa del Prete Grave 21 / Paestum-Archaeological Museum / 480 BC³⁵
- Poseidōnia II / Tomba del Tuffatore / Paestum-Archaeological Museum / 480-70 BC
- Poseidōnia III / Santa Venera Grave 341 / Paestum-Archaeological Museum / 500-475 BC³⁶
- Taras I / Via Otranto Grave 57 / Taranto-Archaeological Museum inv. 66158 / 5th c. BC³⁷
- Taras II / Contrada Chiapparò, Grave III / Taranto-Archaeological Museum inv. 66287-88 / 5th c. BC

Appendix B: *Aulos* Sections Mentioned—a Concordance

- Agora B (BI517), C (BI672), D (BI579), G (BI645) / Psaroudakēs 1994, vol. ii, fig. 87 (full scale drawings)
- Agora G / Psaroudakēs 2002, 210, fig. 12 (drawing, scale 1:1.5 cm)
- Acropolis A (7207), B (7208) / Psaroudakēs 1994, vol. ii, fig. 85 (full scale drawing); 2002, 357, pl. 19 (full scale drawing reduced)
- Baurōn / Psaroudakēs 1994, vol. ii, fig. 95 (full scale drawing)
- Korinthos F (MF9045), G (MF4740A), J (MF4159) / Psaroudakēs 1994, vol. ii, fig. 113 (full scale drawings); 2002, 359f., pl. 20.2-3 (full scale drawings)
- Lindos F / Psaroudakēs 1994, vol. ii, fig. 115 (full scale drawing); 2002, 210, fig. 13 (drawing, scale 1:1.5 cm)
- Lokroi Epizephyrioi Gr. 1050 / Psaroudakēs 1994, vol. ii, pocket (full scale drawing) / Lepore 2010, 444, fig. 30.20 (drawing); 457, fig. 30.41 (photograph)
- Mannella / Lepore 2010, 431, fig. 30.9 (drawing); 453, fig. 30.31 (photograph)
- Perachōra G (A432), I (A423), J (A421+A422), K (A414), L (A418), M (A419), N (A420), O (A417), Q (A412), R (A415), T (A405) / Psaroudakēs 1994, vol. ii, fig. 121 (full scale drawings)
- Perachōra G / Psaroudakēs 2008, 211, fig. 14 (drawing, scale 1:0.7 cm)
- Perachōra I / Psaroudakēs 2002, 211, fig. 15 (drawing, scale 1:0.7 cm); 2008, 211, fig. 15 (drawing, scale 1:0.7 cm); 2013, 111, pl. v.4c (photograph)
- Perachōra J / Psaroudakēs 2008, 211, fig. 15 (drawing, scale 1:0.7 cm)

35 To be published in Psaroudakēs forthcoming b.

36 Castaldo 2012, 66 with fig. 44.

37 Castaldo 2008, 427, fig. 5 (photograph).

Perachōra K / Psaroudakēs 2013, 112, pl. v.4d (photograph)³⁸
 Poseidōnia B_L, B_S, C_L, C_S / Psaroudakēs 2014, 128, figs. 7-10
 Pydna B_L, C_L, C_S / Psaroudakēs 2008, 209, fig. 9 (as c^L); 212 fig. 19 (as d^L, d^S), respectively
 Sparta D, G / Psaroudakēs 1994, vol. ii, fig. 126 (full scale drawings)

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38 In a previous article on the Daphnē aulos (Psaroudakēs 2013, 112 pl. v 4d), the Perachōra section shown is not 'Perachōra Q', as noted, but 'Perachōra K'.

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FIGURE 1 The remains of the lyre together with the surrounding soil inside a plaster narthex
 PHOTOGRAPH BY THE AUTHOR



FIGURE 2 Comparison of head and tail plaques of the carapace with those of a modern *Testudo Marginata*: (a) tail end of modern carapace, and (c) the corresponding ancient plaques; (b) head end of modern carapace, and (d) the corresponding ancient plaques
PHOTOGRAPH BY THE AUTHOR

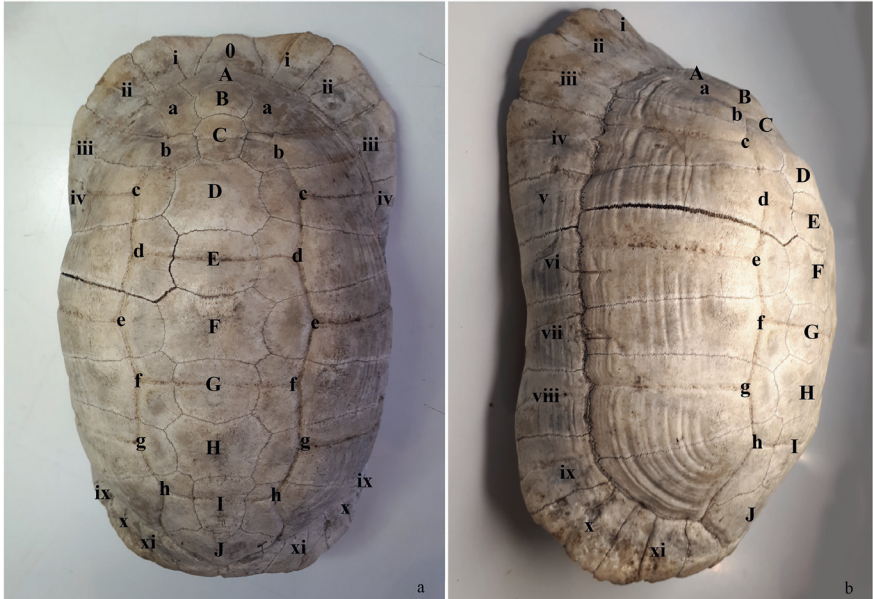


FIGURE 3 A modern *Testudo Marginata*. Enumeration of plaques.
PHOTOGRAPH BY THE AUTHOR



FIGURE 4 The ancient carapace plaques placed over a photograph of a modern *Testudo Marginata*
PHOTOGRAPH BY THE AUTHOR

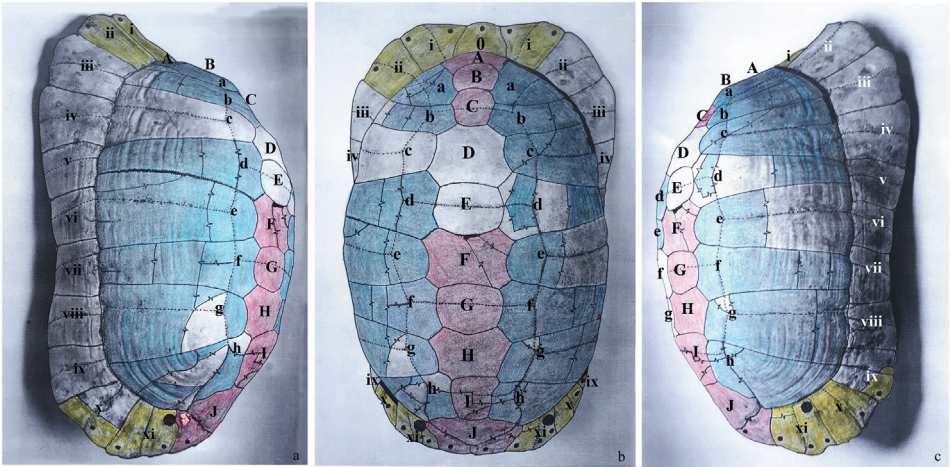


FIGURE 5 The surviving plaques shown in colour on a modern *Testudo Marginata*
PHOTOGRAPH BY THE AUTHOR



FIGURE 6 The small fragments of the carapace
PHOTOGRAPH BY E. STEFANIDOU



FIGURE 7 The main surviving plaques of the carapace
PHOTOGRAPH BY E. STEFANIDOU

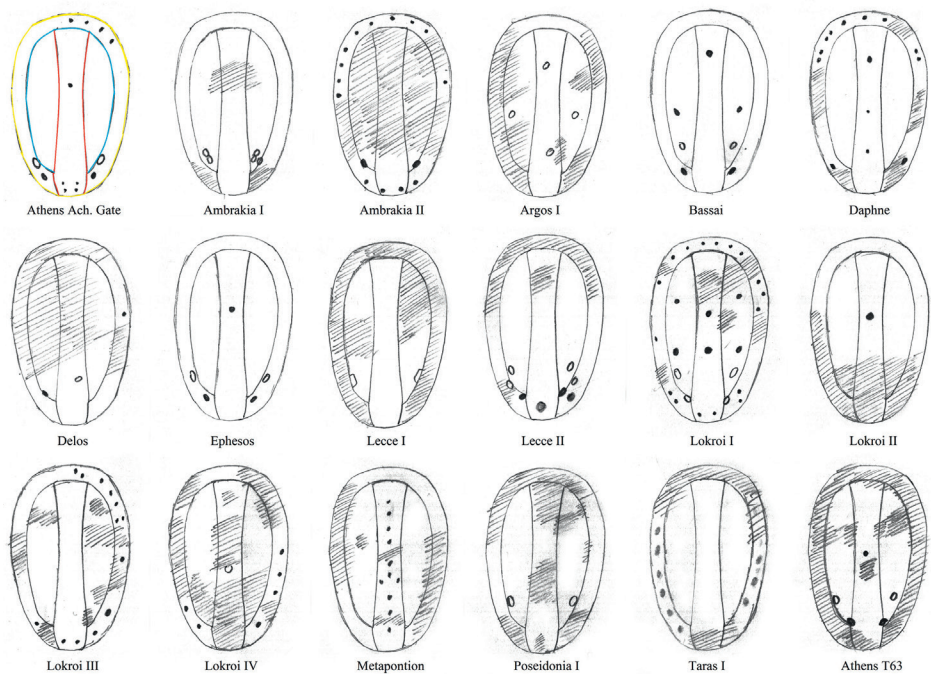


FIGURE 8 Eighteen extant lyre carapaces
DRAWING BY THE AUTHOR



FIGURE 9 Attic kylix (detail), 480-70 BC. Apollōn with *cheleus* (Themelis 1984, cover).
SOURCE: DELPHOI-ARCHAEOLOGICAL MUSEUM INV. 8140



FIGURE 10 Lyre carapace Taras I/Via Otranto (Vendryes 1999, pl. IIc)
SOURCE: TARANTO-ARCHAEOLOGICAL MUSEUM INV. 66158



FIGURE 11 Red figure hydria, Painter of the Yale Oinochoe, 480-60 BC. Hera, Athena, Aphrodite: the judgement of Paris (Κακριδής 1986 II: 97 fig. 36)
SOURCE: LONDON—BRITISH MUSEUM E 178



FIGURE 12 Marble Siren from Kerameikos (detail), mid 4th c. BC. Athens—National Archaeological Museum 774

PHOTOGRAPH BY THE AUTHOR

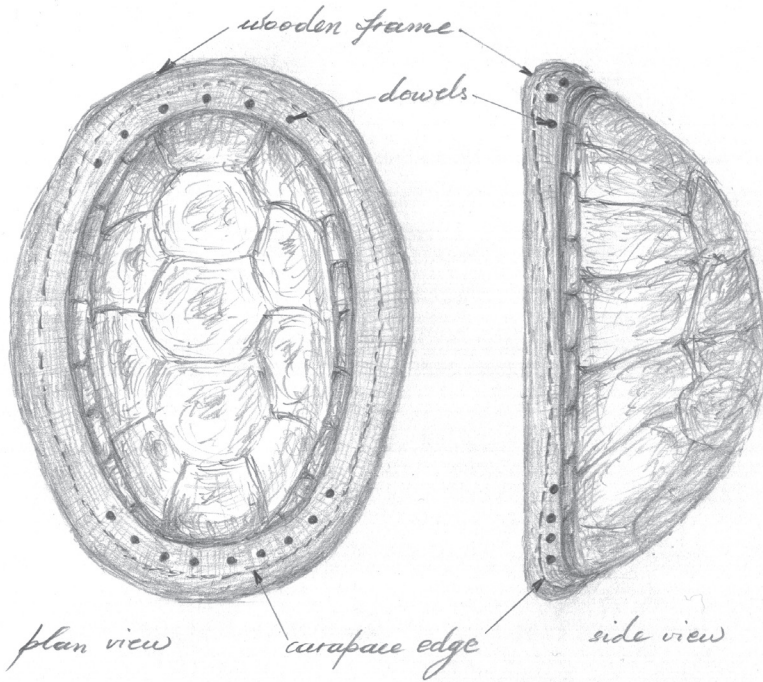


FIGURE 13 Carapace with wooden frame attached
DRAWING BY THE AUTHOR



FIGURE 14 The left (a) and right (b) 'roots' of the string holder prongs embedded in the carapace
PHOTOGRAPH BY THE AUTHOR

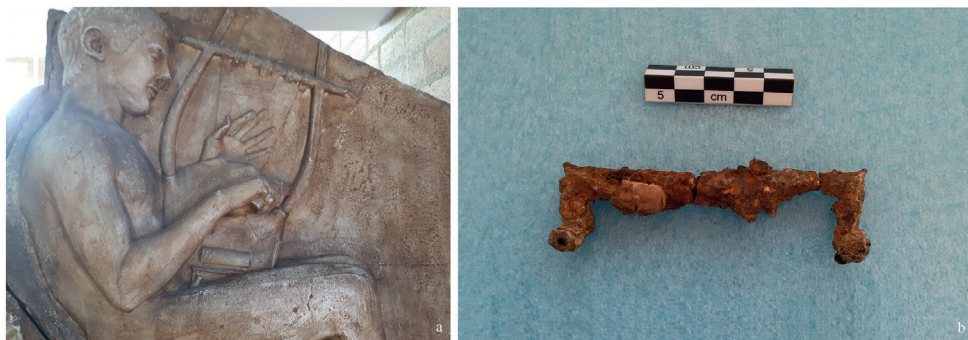


FIGURE 15 Comparison of the string holder (b) with that shown on the Boston Relief lyre (a) (copy in Ure Museum, Reading University)

PHOTOGRAPH 'A' BY THE AUTHOR; PHOTOGRAPH 'B' BY E. KOUMA



FIGURE 16 The string holder

PHOTOGRAPH BY THE AUTHOR



a



b

FIGURE 17 The tail ends of the carapaces Athens 1/Acharnian Gate (a), and Ephesos
PHOTOGRAPH 'A' BY THE AUTHOR; PHOTOGRAPH 'B' IS A PHOTOCOPY
PROVIDED THROUGH PERSONAL CORRESPONDENCE



FIGURE 18 Close up of the string holder taken by a Dino Lite microscope
PHOTOGRAPH BY V. MILONA



FIGURE 19 The main sections of the *aulos*
PHOTOGRAPH BY A. KONTONIS

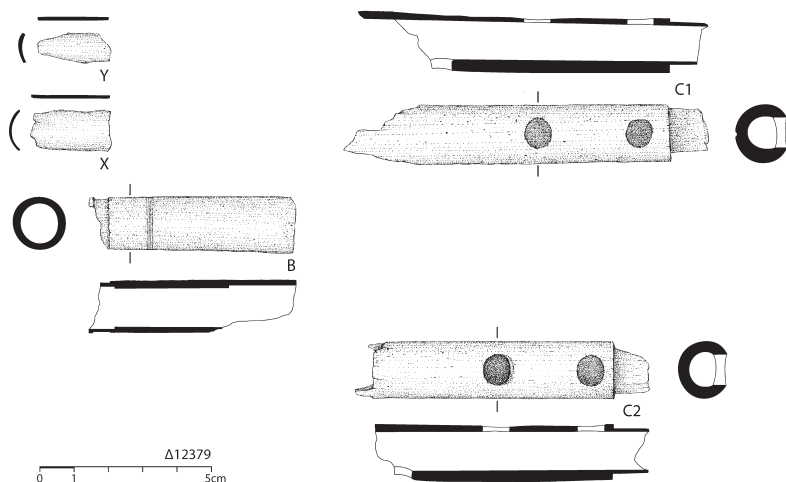


FIGURE 20 The main sections of the *aulos*
DRAWING BY A. KONTONIS



FIGURE 21 Fragmentary pieces from the *aulos*
PHOTOGRAPH BY THE AUTHOR



FIGURE 22 Section B of the *aulos*
PHOTOGRAPH BY THE AUTHOR



FIGURE 23 Section C₁: (a) seen from above; (b) seen from below
PHOTOGRAPH BY THE AUTHOR



FIGURE 24 Section C₂: (a) seen from above; (b) seen from below
 PHOTOGRAPH BY THE AUTHOR



FIGURE 25
 The surviving length of
 fragment X exceeds the depth
 of the downstream socket of B
 PHOTOGRAPH BY THE
 AUTHOR

Conservation of the Lyre from Grave 48 in the Area between the So-Called 'Eriai' Gates and the Dipylon (470-50 BC)

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Abstract

This paper focuses on the conservation of the lyre (*chelys*) of Grave 48, from the area between the so-called 'Eriai' Gates and the Dipylon. First, it describes the lifting of the lyre (sound box) from the ground and the recovery of the fragile plaques and fragments from the compact block of soil in the laboratory. Subsequently, it presents the extensive conservation work undertaken by the present writer and her team. Furthermore, it summarizes the conclusions of the X-Radiography and Scanning Electron Microscopy with Energy Dispersive Spectroscopy (SEM-EDS) examinations of the sound box and the string holder and provides information about the biochemistry, structure and decay of the tortoise shell. In conclusion, the collaboration between conservator and archaeomusicologist, during the remedial conservation treatment, was of great importance, and helped with the identification of the plaques and restoration of the lyre.

Keywords

tortoise-shell – string holder – sound box – keratin – iron – corrosion – mineralization – decomposition

1 Lifting from the Ground

The moment that the lyre came to light in the excavating site between the so-called 'Eriai' Gates and the Dipylon, the conservators realized that the whole assemblage was extremely fragile. The surfaces of the plaques were completely



FIGURE 1
View of the whole
assemblage after
its lifting from the
ground

covered by a compact hard crust of soil, rich in calciferous material. It was deemed necessary to support the find in order to recover it from the ground. Therefore the sound box, made of tortoise shell, was isolated in a block of soil which was reinforced by gypsum strips. The upper surface was covered with aluminum foil, which acted as a temporary protective sheet from the fluctuations of temperature and humidity. The whole block was lifted off the ground with the help of a rigid board placed under it (Figure 1). No fungicide was used, in order not to affect the results of any future investigation (Leigh 1998). Whilst still in situ, the find was photographed and sketched and notes were taken concerning its general condition. Ms Eleni Kouma and Ms Eleni Nikolakopoulou, Conservators of the Ephorate, lifted the tortoiseshell and the string holder from the ground.

2 X-ray Radiography and Scanning Electron Microscopy Examination with Energy Dispersive Spectroscopy (SEM-EDS)

2.1 *Tortoise Shell*

Before any conservation treatment, the block of the whole assemblage underwent an X-ray Radiography scan, in order to assess the situation beneath the hard soil. The X-ray Radiography showed many of the joints of the plaques of the tortoiseshell, as expected. In the image of X-ray Radiography, the light-coloured areas indicate well-preserved material while the dark ones define badly degraded pieces. Less deteriorated material is extended at greyish zones. Furthermore, the attachment between the tortoiseshell and the thigh of the human remains (thigh bone of the dead) is impressively underlined. The block was x-rayed by Dr G. Panagiariis and Dr G. Fakorelis, at the University of West Attica (Figures 2a, 2b). (Device used for the X-ray Radiography: Military control unit and tube transformer head, x-Ray apparatus 15 mA, Mobile-Portable,

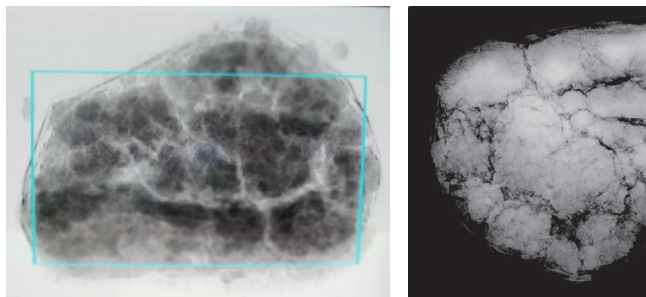


FIGURE 2 a-b) X-ray Radiography of the lyre

No. -6-013-680, manufactured by Picker x-Ray Corp., USA. A Portable Curix 60 / CP1000 Radiographic Film Processor, Type 9462, 230V / 50 / 60Hz, Made by Agfa-Gevaert N.V., Belgium).

Seven tiny fragments from different regions of the tortoiseshell were additionally studied as samples, both with Scanning Electron Microscopy and Energy Dispersive Spectroscopy (SEM-EDS). Spectrum of EDS analysis corresponds to the elements that are present in the sample: calcium (Ca), phosphorous (P), fluorine (F), etc. Furthermore, EDS helps in the identification of each element's concentration in the sample, providing scientific characterization of the material and its condition. A large quantity of the inorganic calcium-based mineral hydroxyapatite $\text{Ca}_5(\text{PO}_4)_3(\text{OH})$ was also identified as contaminant of the surface deposits of the plaques (Panagiaris and Karabotsos 2018). Hydroxyapatite derives from the decay of the tortoise shell, the decomposition of the human skeleton and from calciferous contaminants of the burial environment (Gianoulaki 2017; Panagiaris and Karabotsos 2018).

The overall results showed an extensive degree of fossilization, as well as the action of certain types of bacteria (Panagiaris and Karabotsos 2018) (Figures 3, 4).

2.2 *The String Holder*

The string holder is made of an iron alloy and the technique of manufacture is hammering. It was examined with X-ray Radiography and Scanning Electron Microscopy (SEM), in order to identify the condition, the extent of mineralization, the nature of deposits and the corrosion products. In the image of X-ray Radiography, the light-coloured areas indicate that the string holder does maintain metallic core while dark areas show its absence. Corrosion products are distributed to the greyish areas (Figure 5a).

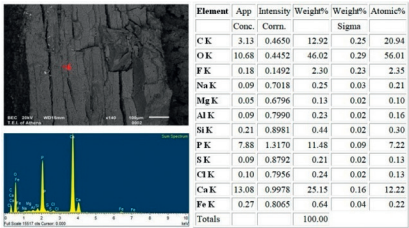


FIGURE 3 SEM-EDS examination (140x). View of a section of specimen K3. Fragmentation and irregularly shaped holes, diameter 3-10µm. Spectrum of EDS analysis corresponds to the elements that are present in the sample and identifies each element's concentration.

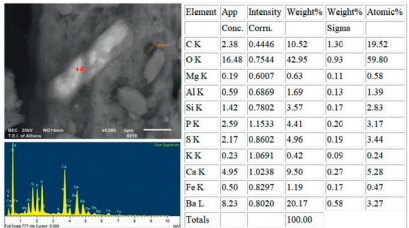


FIGURE 4 SEM-EDS examination (4000x). View of a different section of specimen K3. A Barite crystal (BaSO_4) is observed on the surface and also, a hole diameter 3 µm, due to bacterial action. Spectrum of EDS analysis corresponds to the elements that are present in the sample and identifies each element's concentration.

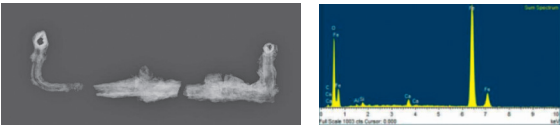


FIGURE 5 a-b) X-ray Radiography of three parts of the string holder. Extensive mineralization and thick deposits are observed. The authentic metallic surface is defined by the red line.

The conclusions of the SEM-EDS examination are that most of the material has been transformed into magnetite, (Fe_3O_4) and goethite ($\text{FeO}(\text{OH})\cdot\text{H}_2\text{O}$) was identified as the main corrosion product. Therefore, a large quantity of the inorganic calcium-based mineral, hydroxyapatite $\text{Ca}_5(\text{PO}_4)_3(\text{OH})$, was identified as a contaminant of the surface deposits on the metallic surface.

The device used for X-ray Radiography is the same as above (parameters: 40kV, 10mAs, 1sec).

3 Keratin: the Structural Material of the Tortoise Shell

3.1 Biochemistry and Structure

The shell of a tortoise is composed mainly of a broad class of fibrous proteins called keratins. The physical structure of a tortoiseshell is created as the

keratin is deposited in layers associated with bone growth (O' Connor, Solazzo and Collins 2014). With age, tortoiseshell can become desiccated and brittle, causing microscopic separations between the layers of keratin and this air gap can cause a loss of translucency (Fenn 1983).

Hard keratinous tissues generally contain some quantity of calcium phosphate salts, from 0.1% to nearly 15% (dry weight), depending on their form and function. Zones of calcification help maintain the stiffness or the shape or sharpness of a structure through differential wear (O' Connor, Solazzo and Collins 2014).

Keratin is a long chain polymer of different amino acids. Cysteine is the primary amino acid specific to tortoiseshell, and sulfur (S) is critical to its function. The keratin molecules are held together to form fibrils by the cross linking of the sulfur-containing groups in what is known as disulfide chemical bonds. The sulfur contributes to the strength and rigidity of the tissues (Cronyn 1990) (Figure 6).

3.2 *Decay*

The decay of keratin occurs along three pathways: the chemical deterioration of the organic and the inorganic components, and through biodeterioration. In even the most mineralized of the keratinous tissues the protein is completely exposed to both chemical and microbial attack. The rate of deterioration due to chemical changes is largely determined by the temperature, moisture content, and pH of the burial environment, although this is complicated by the condition of the material prior to burial and potentially by the processing it has undergone in its transformation from raw material to musical instrument. Thus, despite the fact that these bonds are very strong, heat can break down or cleave some of them, allowing movement of the molecules and making the substance pliable. The structure becomes rigid in its new conformation. Although the disulphide bonds make keratin insoluble in water, some of the polypeptide chains in keratin are held together by hydrogen bonding, which allows water to penetrate into the keratin structure and causes swelling and dimensional change (Florian 2007). "Hydrolysis of keratin is generally slow except at high pH, where the disulphide bonds are destroyed, with weakness and brittleness resulting" (Cronyn 1990). However, the major cause of keratin deterioration is rapid biodegradation. In the soil, keratins are degraded by enzymes produced by specialized keratinolytic microorganisms, primarily fungi. At least 300 fungi are known to use keratins as a source of nutrients (O' Connor, Solazzo and Collins 2014; Błyskal 2009). This is probably why so little keratinous material survives. Anaerobic conditions encourage the survival of the keratinous material.

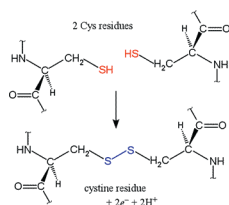


FIGURE 6
Disulphide bond formation in
cysteine, primary amino acid in
tortoiseshell
SOURCE: CRONK 2011

Lastly, even in apparently unfavourable burial conditions, keratinous tissues do survive in close contact with corroding metals. The metal corrosion products pervade the organic material, and invade its structure, affording some level of protection to the organic matrix (Cronyn 1990).

4 Condition of Preservation

Initially, the surface of the whole assemblage was analytically photographed in the conservation laboratory. Many of the diagnostic features identified have been captured using an Olympus VR-370, a compact digital camera with a good macro facility. Closer examination and further documentation were undertaken by the use of an optical microscope (magnification: 40x-80x) and a Dino-Lite Edge series-AM 4000 (AM-7013MZZT), a digital microscope with polarizer, at magnifications typically between 100x and 200x. So, the study of the extent of damage and the investigation of any possible presence of organic remnants or other material of interest was completed.

The upper surface of the block of soil (Figure 7a) was divided into sections, according to the following criteria:

- potential recovery of the fragments in groups;
- condition of preservation (joints, cracks, splits, decomposition);
- minimization of the risk of new breaks;
- information from the sketches and numbering, in situ.

The recovered groups were stored in polyethylene boxes during the long period of conservation work (Figure 7b).

4.1 *The Tortoise Shell*

The external surface of the plaques and fragments was obscured and disfigured by accretions of insoluble salts, contaminants from bone decomposition, mud, and soil debris, whose thickness ranged from 2 to 7 cm (Figures 8a, 8b, 9). The internal surface was also covered by compact soil, insoluble salts, grit, dense network of roots and decomposed bone fragments (Figure 8c). On closer inspection, it was observed that amongst all this extraneous material,



FIGURE 7 a) A view of the reinforced assemblage, before any conservation treatment. b) Classification into groups



FIGURE 8 a-c) Both sides of the plaques are obscured and disfigured by accretions of the burial environment



FIGURE 9 a-b) Both sides of the plaques are obscured and disfigured by accretions of the burial environment

splits from decay of the plaques were obscured, as well as a few tiny parts of tortoise and fragments of human bone.

A few hairline cracks run across the plaques, especially along the areas where the object was under the most tension (Figure 10).

Some of the plaques were severely decomposed, mainly on their back surface. Extensive splitting and cracking had caused partial loss, locally (Figure 11). Most plaques and fragments suffered severe shrinkage; they have also been disfigured and leveled (Figure 10).

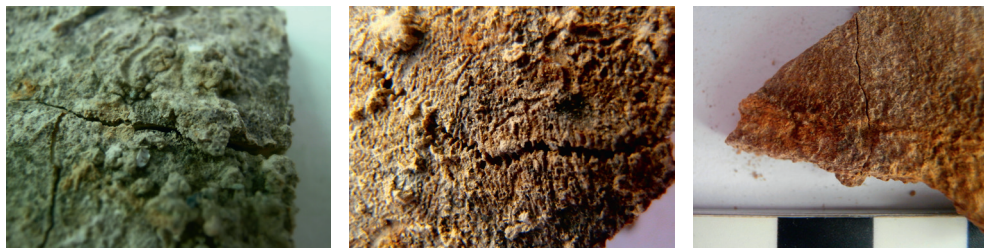


FIGURE 10 a-c) Types of fragmentation



FIGURE 11 a-c) Types of splitting/flaking

A few plaques had traces of oxidation on their surface because of their attachment to the corroded iron pieces of the string holder or the phenomenon of diffusion of iron corrosion products (Figure 12). Seven plaques had extended areas of burning (Figure 13). In addition, a noticeable quantity of carbon was identified in the soil surrounding the lyre.

Thus, five plaques were remarkably intact and many others had been removed from their expected position. The joints of the plaques had completely been separated. In addition, the action of microorganisms had obviously affected limited areas on both sides of the plaques. The existence of very small holes indicates the action of bacteria and microorganisms (Figures 17b, 17c). The fact that symmetrical plaques at both lower areas of the tortoiseshell were missing was considered a significant loss (Figure 26).

4.2 *The String Holder*

The string holder was studied and cleaned under the optical microscope. The extensive mineralization is the main factor in its breaking into more than nine pieces. The metallic surface of the pieces was covered by a hard layer of compact soil, insoluble salts and tiny stones (Figure 14). Beneath these deposits, a thick layer of corrosion products had been formed: ferrous oxides, carbonates,



FIGURE 12 a-c) Local discoloration of the surface by the formation of ferrous oxides



FIGURE 13 a-c) Blacken areas of the surface due to burning conditions



FIGURE 14 a-c) Pieces of the string holder after excavation. Deposits and a thick layer of corrosion products have been formed.

chlorides, sulphates (Gianoulaki 2017). Although the string holder was heavily etched and disfigured by corrosion, the degraded metallic core still offers adequate efficiency to the structure.

Calciferous deposits from the burial environment and bone decomposition (Gianoulaki 2017) were located on the back surface of the tortoise shell and on the metallic surface of the string holder (Figure 14).

The factors that contribute to the bad preservation of the metal surface are possibly the acidity of the local environment, the presence of certain mechanical forces and the fluctuations of relative humidity.

5 Conservation Treatment

5.1 *The Tortoise Shell*

The study of the material and the conservation work were carried out over a period of nine months. Considering the condition of the object the following steps were carried out.

5.1.1 Cleaning

The cleaning process revealed the real condition of the material. During cleaning, it was confirmed that the condition of the pieces ranged from well preserved (Figures 16, 15a, 18) to very soft, friable, disfigured and badly laminated (splitting), especially on their inner surface (Figure 19). Cleaning the fragile pieces turned out to be a particularly difficult task. Each plaque and each tiny fragment were cleaned mechanically in the optical microscope (20x-40x). Gradual removal of the soil was achieved by the use of scalpel, needle and paint brushes. In some cases, the cleaning treatment involved steps of pre-consolidation work. At the

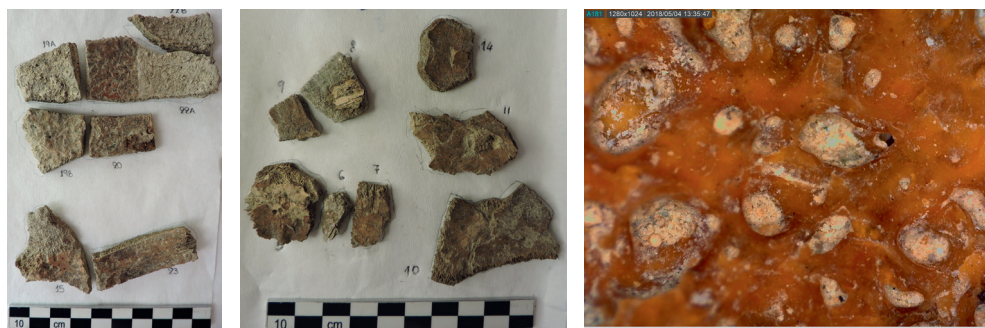


FIGURE 15 a-b) Images of the cleaning process. c) Macro image of the cleaned surface by the use of the digital microscope

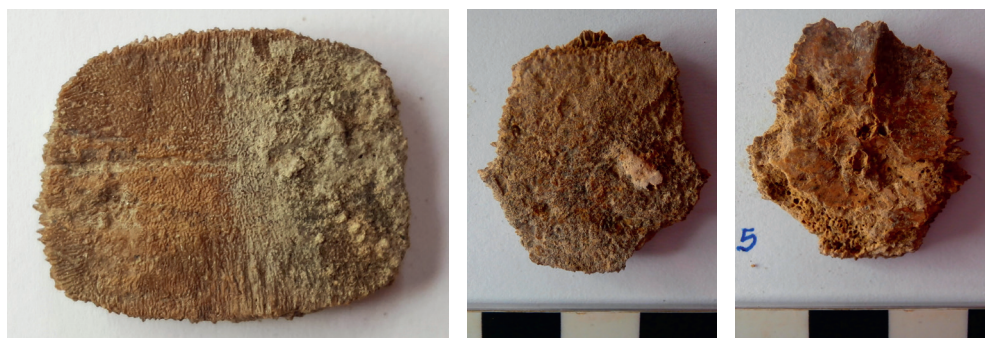


FIGURE 16 a-c) Images of the cleaning process



FIGURE 17 a-c) Images of the cleaning process



FIGURE 18 a-c) Images of cleaned plaques. Traces of the action of bacteria are obvious.



FIGURE 19 a-c) Images of the consolidation process

end of mechanical cleaning, the revealed surface was treated by an application of a 2:1 solution of ethyl alcohol and distilled water.

5.1.2 Consolidation

Consolidation, where necessary, took place by the application of a 3% weight solution of Paraloid B₇₂ in acetone (thermoplastic acrylic resin), in order to set in position tiny splits, strengthen friable areas or cracks and protect against further splitting (Horie 1987) (Figures 10, 19).

Heavily deteriorated, broken plaques and fragments were supported by gauze in order to avoid further damage during cleaning process (Figure 19b). To those areas, which were vulnerable to exfoliation and collapse, a 3% weight solution of Paraloid B₇₂ in acetone (consolidant) was applied, as well (Horie 1987) (Figures 11, 13b, 20b).

5.1.3 Repairing Breaks, Joining Plaques, Assembling Parts

In regard to the ancient lyre and considering the internationally recognised standards for cultural heritage restoration, it was decided that broken parts should be joined together and missing parts should not be replaced by any modern material, such as epoxy resins (Venice Charter 1964). On close inspection, many of the fragments seemed not to match. This made it an excruciatingly slow process to piece them together, and it has not been possible to place some disfigured parts (Figure 20c).

The 40% weight solution of Paraloid B₇₂ in acetone B₇₂ was selected to act as glue for the repair of the broken pieces, because of its good strengthening properties, stability, and low interference with the color of the surface (Horie 1987) (Figures 21, 23a, 23b, 25).

5.1.4 Assembling the Lyre

In consultation with Professor Stelios Psaroudakēs, it was decided that the missing areas should not be filled out in order to give the impression of completeness. The author strongly believes that to fill the gaps in any way would not be ethical; nor would it contribute to the long-term preservation of this fragile and valuable musical instrument. However, it was thought that what is required is a rigid background that could closely enough counteract the gaps. The provision of a dome-like substrate made of suitable material is being considered for the exhibition of the find, when the time comes.

Some of several tiny items which were identified on or beneath the fragments of the carapace, and even in the compact soil surrounding it: tiny pieces of tortoise (Figure 25c), an oval bone item, a few exquisite fibres (brilliant purple and blue, probably of cotton).



FIGURE 20 a-c) Images of assembling

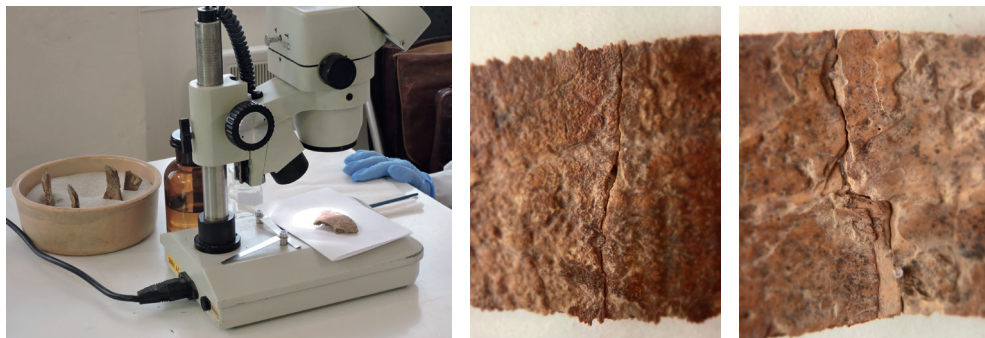


FIGURE 21 a-c) Images of adhering the broken pieces



FIGURE 22 a) The main body of the string holder after conservation treatment. b) Close vision that shows the traces of the tight strings on the metallic surface

5.2 *The String Holder*

The aim of the cleaning treatment was to remove the soil deposits and corrosion products and preserve the stable patina. Cleaning was achieved mechanically by the use of simple tools (scalpel, needles and glass fibre eraser 5 mm), under the optical microscope (20x). During the next stage, the metallic surface was covered with microcrystalline wax Cosmolloit 80H and the three pieces were bonded with a 55% weight solution of Paraloid B₇₂ in acetone (Conservators: E. Kouma and E. Nikolakopoulou).

The remaining six iron fragments, which were recovered from the block of soil, were cleaned mechanically under the optical microscope (as described above) and consolidated with a 5% weight solution of Paraloid B₇₂ in acetone (Figure 24a). Two of them were successfully combined with the carapace and a third joint with the main body of the string holder. (Conservator: V. Milona) (Figures 23, 25a, 25b).

In the end, closer inspection of the string holder under the optical microscope (40x) revealed a tiny part of a narrow strip, which the author believes could be a relic of a gut string (Figure 24b)



FIGURE 23 a-c) The joining of the string holder with the plaques of the sound box (external surface)



FIGURE 24 a) The development of the string holder after recovering of the other two parts. b) Tiny find of a gut string



FIGURE 25 a-b) Joining of the string holder with the plaques of the sound box (internal surface). c) Tiny piece of tartarouga

5.3 *Conditions of Storage*

The sound box of the lyre is being set in a black polyethylene box, supported by polyethylene foam. Relative Humidity inside the box is controlled between 40-45%. The string holder is being set in a polyethylene box, supported by a polyethelene foam sheet (ethafoam). Relative Humidity inside the box is controlled between 30-35%.



FIGURE 26 Assembling the musical instrument

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Painting with Music

Visualizing Harmonia in Late Archaic Representations of Apollo Kitharōidos

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Abstract

When Apollo is depicted playing his lyre, the representation of his active musical performance suggests a sonic element in the viewer's perception of the image. In this paper, I examine how Apollo's music and its effect upon his audience are communicated in late Archaic Athenian vase-painting. I draw attention to three musical terms, namely *ῥυθμός*, *συμμετρία*, and *ἁρμονία*, which were defined around the same time that the images were created. These concepts were also used for art criticism, encouraging a comparison between art and music. Working between these musical terms and the visual images, I show that the material representation of Apollo's music informs each image's composition through the repetition of similar lines and forms among Apollo, his instrument, his audience, and the plants and animals that accompany them. The images suggest that the sounds of the god's music draw the composition together into a musical *harmonia*, thereby continually reaffirming the unifying character inherent to Apollo's music.

Keywords

Apollo – divine music – sensory studies – vase-painting – Greek music theory – Greek art criticism

• • •

Heard melodies are sweet, but those unheard
 Are sweeter; therefore, ye soft pipes, play on;
 Not to the sensual ear, but, more endear'd,
 Pipe to the spirit ditties of no tone ...¹



1 Introduction

Moving between a poetic ekphrasis of a Greek vase and a felt desire to hear the sounds of the ancient music depicted on the vessel, Keats offers his readers the enigmatic sentiment that while “heard melodies are sweet ... those unheard are sweeter”. There is clearly a paradox at work here: how can sounds that are unheard, that are silent, be more pleasant to the ear than those that are clearly audible? In invoking this tension between the sounds of music-making and the visual representation of music, Keats points to the role of the imagination in the aesthetic experience of ancient Greek vase-painting. Images of musical performances are sweeter precisely because they cannot be heard. The audience must instead imagine the music, creating an infinite variety of sounds that emanate out from the image. Permanently captured in a state of continued poetic performance, the pipes must play on, repeatedly offering their viewers the opportunity to imagine the acoustic sounds that fill the visual scene.

Such conflated sensory perception is hardly new with Keats, though he does powerfully evoke the enticing range of experiences offered by ancient art. However, if we look at the ancient images themselves, rather than a later ekphrastic account of them, we may see that such blended modes of sensation were already being employed to enhance the viewer’s experience of an image.² To see how the visual material communicated the sounds of music, we need only turn to the Berlin Painter’s water vessel that depicts Apollo playing his lyre while sitting in a winged tripod that flies over the sea (Figure 1).³ The majority of the visual field is taken up by the two extended wings, which stretch out

1 John Keats, *Ode on a Grecian Urn*, 11–14. On the aesthetic implications of this passage, see Ferris 2000, 52–84; Starr 2013, 102–17.

2 By invoking the viewer’s sensory perception of and interaction with the image and, by extension, the vase, I draw upon recent discussions of the embodied object (Gaifman and Platt 2018, 402–19; Gaifman 2018, 444–65).

3 Beazley 1930, pls. 25, 26; *ARV*² 209.166; Young and Ashmole 1968, 150–4; Simon, Hirmer, and Hirmer 1981; Otto 1984, 199–201; Paquette 1984, 163, L30; *LIMC* s.v. Apollon, no. 382; Kurtz 1989,



FIGURE 1 The Berlin Painter, *Apollo Hyperpontios*, Attic red-figure *hydria*, fired clay, h. 58.2 cm, c. 490-480 BC
 SOURCE: VATICAN CITY, MUSEO GREGORIANO ETRUSCO VATICANO, 16568.
 VATICAN MUSEUMS. PHOTO COPYRIGHT © VATICAN MUSEUMS.

to either side, and a large tripod that spans the length of the vessel. Perched in the large bowl is Apollo; a quiver of arrows is strapped to his back and

73-6, pl. 43.1; Buranelli and Sannibale 2003, 86, 116f.; Bundrick 2005, 143, fig. 84; Padgett 2017, 311-13; Beazley Archive no. 201984.

in his left hand he holds out a *chelys* lyre, angled on a diagonal to the upper right, while his right hand holds a *plēktron*, partially obscured by the tripod's handles.

The scene is a complex one, not least for its rare composition in which Apollo sits in a flying tripod.⁴ However, even acknowledging the mythological associations the image evokes, we can say with certainty that the image draws particular attention to Apollo's lyre, both through the graceful extension of its arms and through its physical position on the vase, where it is depicted on the almost flat surface just above the steep shoulder. There, it is the main object that the viewer encounters when looking at the vase from above, while the rest of the scene, including the imposing tripod, is obscured by the curvature of the vase's body. Of all the instruments used by the gods, the lyre was Apollo's particular favorite: in the *Homeric Hymn to Apollo*, the god calls for it moments after his birth (131f.) and later relies upon its music to entice the other gods to sing and dance with him on Mount Olympos (186-206). The *Homeric Hymn to Hermes* suggests an even more powerful connection between the god and the instrument, for Apollo is so enchanted with the instrument that he exchanges his cows for Hermes' lyre (436-9).⁵ The profound connection Apollo has with the sounds of the lyre is evoked in the Berlin Painter's scene, where the god stares with concentration at his instrument, focusing the viewer's attention upon the activity he undertakes. He looks to his left hand, the thumb of which hooks around the leftmost string, while his other fingers stretch out across the remaining strings. The tripod's round handles draw further attention to the god's music-making by isolating the two activities that are essential for the production of music: in one opening the lyre's tortoise shell body is revealed to the viewer, while, in the other, the god's arm and hand, which holds the *plēktron*, stretches horizontally across, its linear form contrasting with the curving lines of the tripod and instrument. By layering the tripod's handles on top of the god's lyre, the arms of the instrument extend up both from the tortoise shell body and from the large round handle, so that the god appears to coax his melody from both instrument and tripod.

The relationship between the tripod and the lyre is further underscored by the similar lines that are used to depict the two objects. Parallel upward curving lines from the arm of the lyre are repeated for the tripod's right wing, as well as in the downward pointing palmettes on the upper rim of the vessel.

4 The scene is unusual in Greek vase painting, although not unique. As Beazley points out, the Berlin Painter seems to have worked from a pre-existing model, given its similarity with an earlier black-figure image by the Ready Painter, currently in the Louvre (Cp 10619; *ABV* 685.8; Kurtz 1989, 73f.; Shapiro 1989, 58f.).

5 *Hymn. Hom. Merc.* 475-502.

The palmette, in turn, also reproduces the rounded shape of the instrument, and the folds of the god's *himation* are reproduced in the tight lines of feathers on the wings. The effect of these repetitions, specifically that the shapes and lines used to construct the image repeat throughout the scene, establishes a visual resonance and connection among god, lyre, and tripod. The composition of the scene itself is also carefully balanced, with a wing extending on either side of the tripod, under which a dolphin jumps. In the sea below the fish are carefully arranged, two on either side of the central line, at which point the octopus floats. Even the god's two attributes, his lyre and his bow, are balanced on either side of his body. The image thus not only emphasizes the unity between god and object, but it also comments upon the quality and tone of Apollo's music, characterizing it as calm and balanced, just as the music that moves through it.

This particular image of the god travelling across the water recalls the scene in the *Homeric Hymn to Apollo* when Apollo journeyed from Delos to Delphi.⁶ Though the hymn does not describe him sitting in a flying tripod, as we see on the Berlin Painter's water vessel, he does play his lyre, producing beautiful music as he moves from one location to the other.

εἶσι δὲ φορμίζων Λητοῦς ἐρικυδέος υἱός
 φόρμιγγι γλαφυρῇ πρὸς Πυθῶ πετρήεσσιν,
 ἄμβροτα εἶματ' ἔχων τεθυωμένα· τοιοῦ δὲ φόρμιγγ
 χρυσέου ὑπὸ πλῆκτρον καναχὴν ἔχει ἱμερόεσσιν.

And playing his scooped-out lyre glorious Leto's son
 goes also to rocky Pytho, his divine garments scented,
 while his lyre under the golden *plēktron*
 makes a delightful clangor.⁷

Apollo's journey is presented to the hymn's audience as a synaesthetic experience, a confluence of sensory perceptions that characterizes divine movement and action.⁸ Not only does the god play his lyre, itself evocatively described in language that recalls its creation in the *Homeric Hymn to Hermes*,⁹ but his clothes are wonderfully scented, his music sounds delightfully while he moves,

6 The two locations are linked in the *Homeric Hymn to Apollo*, which, as has been well observed, consists of two distinct hymns: one to the Delian Apollo, and a second to Pythian Apollo. Beazley suggested that the journey here is Apollo's initial one from Delos to Delphi. See Kurtz and Beazley 1983, 73f.; Bundrick 2005, 140; Padgett 2017, 311.

7 *Hymn. Hom. Ap.* 182-5; translation adapted from West 2003.

8 On synaesthesia in antiquity, see Porter 2010, 430-5; Butler and Purves 2013.

9 *Hymn. Hom. Merc.* 39-64.

and his golden *plēktron* sparkles and gleams in the sunlight. His journey is almost secondary to the spectacle of his performance, and in many ways it is the particularly astounding quality of his performance that establishes the link between the two sites of his worship. That the hymn would itself have been performed through song further enhances the spectacle in its layering of musical sounds. And yet, the hymn also marks the distinction between the mortal singer's performance and the superlative, multisensory performance the god himself offers: unlike the musician's song, the god's music can never be physically experienced by a human audience, who can only encounter it through the performer's song. Instead, the audience must imaginatively create the sounds of divine music for themselves. Apollo's performance in the hymn is thus perceived through the audience's visual encounter with the human musician, the sound of his song, and their imaginative listening to Apollo's music or smelling his perfumed robes.¹⁰

We find a similar synaesthetic presentation of Apollo on the water vessel: the image invites us to imagine the metallic tripod glistening in the sun, the wings shining as they flap, the smell of the sea, the sounds of the lyre, and the sea creatures jumping and dancing to the god's music. The sensory elements the image evokes for its viewers would have contributed to their aesthetic appreciation of the scene, while, at the same time, it informed their particular experience of Apollo's divine presence as being materially bound up in the combination of these particular sensations. In both the *Homeric Hymn* and the vase-painting, then, our experience of Apollo is rooted in our sensory perception of the god.

This innovative mode of representation is not isolated to this singular image but, rather, similarly creative and evocative scenes appear throughout the late Archaic period, suggesting that this particular representational strategy was an essential component of Apollo's depiction at this time.¹¹ In what follows, I discuss those instances when the viewer's visual perception of these images is conflated with their imagined auditory engagement with them, focusing on

10 On the multisensory experience of the divine and its role in epiphany, see especially Platt 2011; Petridou 2015.

11 On representations of Apollo as a musician, see especially LIMC s.v. Apollon, 183-327; Castaldo 2000, 15-37; Bundrick 2005, 140-50; Power 2010, 420-66. On Apollo's use of a *chelely* lyre or a *kithara*, and whether this choice is tied to the time period in which the image was created, see Sarti 1992, 95-104.

how the sounds of Apollo's music are conveyed in a visual medium.¹² For, in depicting the god actively playing his instrument, the images visually communicate to their viewers the presence of his music. In other words, in each of the three examples I consider below, the lyre that Apollo holds is not only an attribute that identifies him, but his active use of the instrument for his musical performances lends a sonic quality to the visual representations. Having established how the images depict the god's music, I then discuss how technical terms used in music and art theory—*rhythmos*, *symmetria*, and *harmonia*—provide us with a language with which to describe the visual representation of the sounds of Apollo's music. Apollo's powerfully affective music informs the scene's composition, whether it is through the physical position of the figures, who direct their attention to the god's music, or through the repetition of similar lines and forms among Apollo, his instrument, and his audience. These physical, material traces of divine, immaterial sound make visible the potential power associated with Apollo and the sound of his music.

2 Painting Music

One of the most tangible ways that Apollo's music is depicted occurs in those scenes where actual letters are inscribed; these letter forms both visualize the presence of musical sound and mimic its movement throughout the image.¹³ A particularly compelling example of this phenomenon positions Apollo's music within a divine chariot procession. On a fragmentary black-figure stand found in the Athenian *agora*, a female figure, likely Artemis, steps up into a chariot pulled by four horses (Figure 2).¹⁴ They walk towards Apollo, who stands in front of the chariot. While he delicately holds a flower with his right hand, he grasps a *chelys* lyre with his left hand. His fingers are spread out to touch the strings, while his thumb is hooked around the rightmost string, ready to pluck it and produce a musical note, or perhaps to add another sound to the music he has already created.

12 For a similar attention to the soundscape suggested by Greek vases, particularly with respect to instrumental music, see Yatromanolakis 2016, 1–42.

13 The presence of letters in close proximity to musicians is not unique to Apollo, though the consequences of it are particularly striking with him. For a brief discussion of the inclusion of letters within musical and sympotic scenes, see Lissarrague 1990, 123–39.

14 Shear 1937, 179f.; Shear 1938, 342–4; Camp 1980, 9, fig. 14; Kahil 1984, 1210; Chiarini 2018, 238f.; Beazley Archive no. 7833.



FIGURE 2 Unattributed, *Artemis Mounting a Chariot, Apollo Playing his Lyre*, Athenian black-figure stand, fired clay, h. 13.4 cm, c. 525-500 BC
SOURCE: EPHORATE OF ANTIQUITIES OF ATHENS CITY—MUSEUM OF ANCIENT AGORA, P9275. © HELLENIC MINISTRY OF CULTURE AND SPORTS / FUND OF ARCHAEOLOGICAL PROCEEDS.

That we, as viewers, should imagine the scene to be filled with lyre music is suggested by the series of letters that the artist has included (Figure 3).¹⁵ On the right, the letters O I E E O Γ cascade downwards from Apollo's instrument, emerging from the end of the lyre and then falling to the ground. Their downward descent is repeated by a similar pattern of letters, this time reading O P E I O, that are placed between the front and back legs of the horses. Above the horses' backs are three further letters, O I E, which are positioned in such a way that they continue the broad diagonal line of the letters that fall from the lyre. Though the letters do not form any comprehensible words, they should be distinguished from gibberish inscriptions, insofar as they constitute actual

15 Shear asserts that the letters are gibberish, although there may also be the possibility that this is an early attempt at indicating a basic musical notation, as Bélis argues with respect to an *epinetron* in Eleusis (see Shear 1937, 180; Bélis 1984, 99-109). Pöhlmann and West (2001, 8) suggest instead that this vessel depicts "an unsophisticated attempt to express the characteristic sound of the instrument". Yatromanolakis (2016, 1-42, and especially 21-42) discusses other instances of painted inscriptions within the framework of a soundscape. For more on Greek musical notation, including its first appearance in the literary record, see West 1992, 254-76.



FIGURE 3 Detail

SOURCE: EPHORATE OF ANTIQUITIES OF ATHENS CITY—MUSEUM OF ANCIENT AGORA, P9275. © HELLENIC MINISTRY OF CULTURE AND SPORTS / FUND OF ARCHAEOLOGICAL PROCEEDS.

letterforms.¹⁶ Moreover, their close proximity to Apollo's lyre suggests that they emerge from the god's manipulation of the instrument's strings, filling the entire image with musical sound. Their inclusion, therefore, makes visible the sounds of Apollo's music, for they trace the movement of sound as it emerges from the strings of the lyre and passes into the rest of the scene.

The other figures in the scene clearly hear Apollo's music and respond to it. The horses lift their legs and begin to walk forwards, the shape of their bent legs echoing the curving line of the letters that fall between their legs. Their heads also dip forward and bend back energetically, again picking up the movement of the letters around them. Their energy and forward movement, where they walk together with carefully coordinated steps, is thus visually tied to the musical sounds that originate with Apollo's lyre. A similar visual resonance exists between Apollo and the deer who stands to the right, where it prances forward while lifting its head back, moving its head on a similar diagonal to the letters that emerge from the lyre and fall to the god's feet (Figure 4). Moreover, the shock of white along the deer's neck and chest that stands out against its dark body draws a connection with Apollo's appearance as his black garment is contrasted with the white garland around his head and the white instrument he holds. The deer, so clearly affected by the sounds it hears, dances beautifully behind the god, responding with its entire body to the musical performance underway. Together with the letters that are written in front of Apollo, the visual resonances between the figures and the animals in the scene work to communicate to the viewer not only the sounds of Apollo's music, which seem here to have a lively timbre, but also the effect they have on their audience, where they even inspire animals to stand up, to move, to dance.

3 Visual *Rhythmos*

Though the presence of letters in the chariot scene is perhaps the clearest way by which musical sounds may be indicated in a visual image, their inclusion remains a relatively rare practice of communicating sound in Archaic and Classical vase-painting. More common is the image's suggestion, through its composition, of the character and effect of Apollo's music. For instance, a small, black-figure *mastos*, a pointed cup, draws visual attention to Apollo's music by depicting him on one side, standing alone in the center, dressed in

16 For more on gibberish, or nonsense, inscriptions generally, see Pappas 2012, 71-111; Mayor, Colarusso, and Saunders 2014, 447-93; Heesen 2016, 91-118; Chiarini 2018.



FIGURE 4 Detail

SOURCE: EPHORATE OF ANTIQUITIES OF ATHENS CITY—MUSEUM OF ANCIENT AGORA, P9275. © HELLENIC MINISTRY OF CULTURE AND SPORTS / FUND OF ARCHAEOLOGICAL PROCEEDS.

the elaborate performance costume of a *kitharōidos* (Figure 5).¹⁷ Surprisingly, given his clothing, he holds out a *chelys* lyre, an instrument more frequently used for young men's musical education since it was easier to play than the large, wooden *kithara*.¹⁸ Regardless of his instrument, the image makes clear that the god performs masterfully: captured in the midst of his performance, the god's left hand stabilizes the instrument while his right hand holds a *plēktron*, which he uses to pluck at the strings. As with the two images discussed above, in this scene Apollo's active musical performance suggests to the viewer that the sounds of his music fill the visual field. Indeed, the image even prompts its viewers to wonder whether the flowers that bend and turn around the divine musician are, in fact, dancing to his music, their sinuous stems moving and pulsing to the sound of the music the god plays, while the flower buds echo the curving shape of the lyre that produces those sounds.

Such visual resonances between flower and instrument, or between dancing animals and musical performances, allow us to make general statements concerning the character of Apollo's music: we might say that there is something seductive about it, since it clearly affects those who hear it, or we might characterize it as lively and energetic, since it inspires its audience to dance and move in response. However, if we consider this and other scenes of Apollo's music together with the musical terminology that was beginning to be theorized and defined more carefully at this time, there emerges a vocabulary with which to describe the various components of a melody and their corresponding effect. Building upon the foundational work by J.J. Pollitt (1974), I isolate three of these terms since they are the most immediately relevant to our discussion of how images might communicate the sounds of music: *ῥυθμός*, *συμμετρία*, and *ἄρμονία*. Importantly, these concepts were also transferred to art criticism, so that the terminological language already invites a certain comparison between art and music.¹⁹

Rhythmos, perhaps the most challenging of these terms, can be defined as the form or shape of each figure, animal, or object. In the course of the fifth and fourth centuries BC, the term also took on the additional sense of repetition,

17 Walters, Forsdyke, and Smith 1893, no. B681; *Paralipomena* 309; *Add*² 144; *LIMC* s.v. Hermes, 198B; Beazley Archive no. 352297. The costume of the *kitharōidos* consisted of the *epiporpama*, which was a long robe, highly decorated, and fastened at the shoulders with a brooch. On *kitharōidia*, see Power 2010.

18 Unusually, a piece of decorated fabric, another feature of the *kitharōidos*' performance attire, hangs from the instrument, thereby elevating the smaller *chelys* lyre to the status of the more difficult and complicated *kithara*. For further discussion of the distinction between the *kithara* and *chelys* lyre, see Maas and McIntosh Snyder 1989, 58f.; West 1992, 34f.

19 Pollitt 1974, 14-23.



FIGURE 5 The Pistias Class, *Apollo Kitharōidos* (A) and *Hermes* (B), Attic black-figure *mastos*, fired clay, h. 8.89 cm, c. 520-500 BC

SOURCE: EPHORATE OF ANTIQUITIES OF ATHENS CITY—MUSEUM OF ANCIENT AGORA, P9275. © THE TRUSTEES OF THE BRITISH MUSEUM.

so that it also could refer to the configuration or proportion of the component parts of a scene or of a pattern painted onto a vase or sculpted into stone.²⁰ Although there seem to have been musical implications to *rhythmos* in the earlier material—both art and music have discrete forms that repeat throughout their respective compositions—Plato elaborates upon the role that *rhythmos* played in music when he describes it as order within movement, so that it determines the order and pacing of notes within a composition.²¹ Although

20 The term first appears among the lyric and elegiac poets of the seventh and sixth centuries. The earliest attested usage is in a fragment of Archilochus (128 West), in which he implores his heart to recognize the changeable nature of life (οἶος ῥυσμός ἀνθρώπους ἔχει). It acquired a sense of patterning already by the beginning of the fifth century, when Aeschylus (*Cho.* 793-9) describes the regular beat of a horse's strides as *rhythmos*.

21 Pl. *Leg.* 665a.

the complexity of the term *rhythmos* has given way to various interpretations,²² what remains well established in the ancient material is its use in discussions of the formal characteristics of both music and art.

Even though a clearer understanding of *rhythmos* within music theory and art criticism developed many years after the cup was created,²³ its earlier sense of denoting repeating forms helpfully gives us the vocabulary with which to describe how Apollo's music may be visible and how we may see the effect his music has on his audience. On the cup, similar visual forms, or similar *rhythmoi*, make up the composition. For instance, the rounded shape of the lyre's arms is picked up by the cord attached to the *plēktron*, so that the two objects are visually linked with each other beyond their obvious functional relationship. Moreover, the elaborate vegetation that surrounds Apollo resembles the shape of the god's lyre: the stalks of the flowers form curvilinear shapes similar to the rounded lines of the arms of the instrument and the sweep of the *plēktron*'s ribbon, while the tops of the buds and central petal recall the upper portion of the instrument's arms and strings. Though these flowers are essentially decorative here, they transcend mere ornamentation in their visual similarities with Apollo and his instrument, and become visual echoes of the movement of Apollo's music through the scene.²⁴ The flowering plants that surround him also spread around the sides of the vase, where under each handle they form arabesque patterns from their stalks and blossoms (Figure 6). Although the effect of such resonances already suggests a relationship among the god, his music, and the surrounding landscape, it is also possible to discuss their similarities within the context of *rhythmos*. The particular curving line of the lyre's arms could even be isolated as a defining *rhythmos* for the image, so that its repetition across the image acts almost as a visualization of Apollo's music, emanating outward from the lyre and Apollo to his surroundings.

In addition to the painted decoration, the physical shape of the cup, formed in a careful point that echoes the shape of a breast,²⁵ further amplifies the presence of Apollo's music, since the shape of the lyre and of the flowers mimic the shape of the vessel itself.²⁶ Not only, then, do the elements within the com-

22 Much of the uncertainty can be traced to two competing etymologies for ῥυθμός: the first derives it from ῥέω, 'to flow', which suggests the idea of repetition and flow; the second sees it connected to ἐρύω, 'to draw' or 'to protect' (Pollitt 1974, 220-8).

23 Pollitt 1974, 220f.; Barker 1984, 225 n. 131, 229 n. 153.

24 On decorative plants on vase-painting, see Kéi 2015, 271-80; Kéi 2018, 143-66; Kéi forthcoming.

25 This cup is of a mastoid shape, rather than a *mastos* proper since it lacks the pointed base and nipple (Coccagna 2014, 399-401).

26 I thank the anonymous reviewer for this observation.



FIGURE 6 Detail. Side with flowers under handles

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position demonstrate the effect that Apollo's music has upon them, but the material body of the vase itself is structured around curving lines that open up near the brim. Furthermore, the cup's pointed base, which cannot hold up the cup, required that the vessel be held at all times when it was full of liquid.²⁷ We can imagine, then, that as the cup moved within the drinker's grasp, when it was lifted to one's mouth, or jostled as it was passed from person to person, the painted vegetation would have appeared to move on the surface of the vase, dancing to the sound of Apollo's music.²⁸ Because of its unusual shape, the cup was rarely still or simply on display, but rather it was constantly in motion as it was passed around or held up to one's mouth.²⁹ The physical movement that

27 Coccagna 2014, 408.

28 On the importance of touch and, by extension, hands, in fostering a crucial point of contact and engagement between viewer and object, see the discussion of embodied objects in Gaifman and Platt 2018, 402-19, and especially 404-6; Gaifman 2018, 446-51.

29 Coccagna 2014, 399-411.



FIGURE 7 Side B

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was intimately associated with the cup thus would have defined the ancient experience of the musical Apollo, who appears to be continually in the process of actively creating the musical sounds that, in turn, appear to animate the flowers that surround him. The inclusion of Hermes on the reverse, where he too is shown surrounded by the curvilinear dancing flowers, suggests that Apollo's music has fully infused the vase with its sounds (Figure 7). Indeed, the messenger god has turned his head as if to listen to Apollo's music while with one hand he points to space in front of him. Both gestures implicitly direct the viewer's attention back to Apollo, asking us to turn the cup around and around in our hands, animating the god's performance in the process.

4 Visual and Musical *Harmonia*

Discussing a visual composition in terms of its *rhythmoi* can, as the above example has shown, helpfully isolate those formal elements of the scene that

are drawn from the central musician or the repeating forms throughout the image. By determining the material presence of Apollo's music in this way, we may also characterize the kind of music the god creates as well as see the effect of the musical sounds on his audience. Let us turn to a red-figure storage vessel by the Bowdoin-Eye Painter, which similarly depicts Apollo as a masterful *kithara* player, joined here by Artemis and Leto (Figure 8).³⁰ As with our previous example, here too we may discuss the *rhythmoi* that encompass the forms and structure of the composition. Apollo, identified by inscription, occupies a central position so that the viewer's eye easily falls upon the spectacle of his performance. The close connection the god has with his instrument is illustrated through the repetition of similar lines and shapes between the god's body and his *kithara* (Figure 9). Straight, vertical lines are replicated on the *kithara*'s frame and strings, on the fabric hanging from the instrument, and on Apollo's cascading drapery. Similarly, the curvilinear forms that make up the attachment that holds together the arms and body of the instrument are repeated in Apollo's curly hair, in the swirl of drapery wrapped around his body, in the long curve of the *plēktron*'s cord, and in the dappled decoration on the *kithara*'s suspended fabric. Unity between the god and his instrument, and by extension with the music he creates, is established through the repetition and layering of formal elements upon each other.

The visual forms, or the *rhythmoi*, that make up the figure of the performing Apollo and those of his audience draws them together in a shared experience of listening to the *kithara*'s music. For instance, Apollo's gaze and the direction to which he points his *plēktron* direct the viewer's attention to the right side of the painting, towards his sister Artemis. She holds up her skirt as if walking forward, having just finished turning to face her brother, whose music has physically arranged her body towards the divine melody. Leto has been similarly captivated and affected by Apollo's music, as is suggested through her physical position facing her son. The flower she holds also betrays the influence of the god's music: as she raises it behind Apollo's head, the plant extends back towards her, twisting and turning as it approaches her face. In its sinuous form, we may perceive the effect of Apollo's music, in much the same way as on the black-figure cup (Figure 5), where there exists a formal relationship between the god's lyre and the shape of the flowers. As a result, the curvilinear lines that predominate in this scene visually establish the figures' connection with Apollo's music. We can thus describe Artemis and Leto's physical reaction to his performance as the music working upon them to transform their *rhythmoi*

30 Walters 1927, III.Ic.4, pl. 168, no. 3.2A-B; ARV² 168; Add² 183; Beazley Archive no. 201543.



FIGURE 8 Recalls the Bowdoin-Eye Painter, *Apollo Kitharōidos, Artemis, and Leto* (A), *Three Athletes* (B), Attic red-figure amphora type A, fired clay, h. 71.12 cm, c. 520-500 BC
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until they are commensurate with Apollo's own.³¹ In other words, Artemis and Leto, who hear Apollo's music, are understood visually as responding to the sounds of the lyre because of the commensurability, or *symmetria*, of their *rhythmoi* with those of Apollo and his *kithara*. *Symmetria*, a fundamental concept in art criticism, music theory, and philosophy, may broadly be defined as the commensurability of the *rhythmoi* through which *symmetria* consists and is formed.³² In other words, *symmetria* is the measured proportionality of one *rhythmos* with respect to another. Moreover, as the *rhythmoi* are repeated across the surface of the vase in such a way that is balanced and pleasing to the viewer, the pleasing effect created by their *symmetria* may also be described as their *eurhythmia*. We could thus describe the gods' balanced figures and the way that they respond to each other, Artemis and Leto each flanking Apollo, who plays his *kithara* in the center of the image, as a visual expression of the *eurhythmia* inherent to Apollo's music.³³ The creation of art and the fundamental structure of music come together in their shared terminology, for just as Polykleitos laid out the correct, numerical proportions to which a sculpted body should conform, so too does Aristotle tell us that Pythagoras argued that the numbers exist in a musical scale that in turn determines the form of all things.³⁴

The *symmetria* of the Bowdoin-Eye Painter's composition further ensures the image's visual and musical *harmonia*, which may be characterized as the repetition of *symmetria* into a proportional unity, by which each form is shown to be balanced with the rest of the composition. As such, a visual unity, or a 'fitting together,' is established among the figures, so that the effect of the visual patterns is a composition unified through the lines and shapes used to create the forms themselves.³⁵ When Apollo actively plays his instrument, the visual

31 As Kowalzig notes, "*rhythmos* bears in itself a transformative element, an element of change, and of potential innovation" (see Kowalzig 2013, 171-211, esp. 190).

32 Pollitt (1974, 14f.) translates the word *symmetria* as 'commensurability', and subsequent scholars have followed suit (see Gaifman 2017, 392).

33 *Eurhythmia* has been the focus of much scholarship. I follow Pollitt's definition of it as "the quality of being well shaped, well formed", since he bases his argument on Xenophon's account (*Mem.* 3.10.10-12), which is the earliest surviving literary source that uses this term (see Pollitt 1974, 177-80).

34 Arist. *Metaph.* 1090a23; Pollitt 1974, 14-18.

35 The most literal meaning of *harmonia* is 'a fitting together', so derived from ἀρμόζω. It was used in this manner by Homer (*Od.* 5.248, 361) to describe the joining together of the planks and bolts of a ship. The term's meaning was later extended to refer to an aesthetically or spiritually pleasing concord of diverse elements. This innovation seems to have first arisen with the musicians, possibly due to the fact that the strings of a lyre had to be fitted together properly before tonal concord could be achieved, which then led to the

representation of his musical performance brings together three corresponding musical and visual elements, that is, *rhythmos*, *symmetria*, and *harmonia*, which characterize the image as compositionally balanced and well structured, while it also describes the quality of his music, that it too is melodically balanced and aesthetically pleasing. The image of Apollo's performance thus establishes that in playing his lyre and sharing the sounds of his music, the god cultivates balance and order among his audience and, in much the same way as he does in the *Homeric Hymn to Apollo*, he draws each figure, animal, and plant together into a musically-determined *harmonia*. Even the shape of his instrument, with a larger base whose arms rise up in a gentle slanting curve, recalls the shape of the storage vessel upon which the image was painted, thus bringing the painted scene together with the physical vase that bears this image. Crucially, the image offers this comment on the sounds and effect of Apollo's music in a visual medium, so that the *harmonia* inherent to the modality of his specific musical performance is understandable here through the visual representation of his performance.

5 Breaking through the Frame

There are two further details in the Bowdoin-Eye Painter's composition that elaborate upon the particular effect that Apollo's music is shown to have on his audience. First, the arms of Apollo's *kithara* have been depicted in such a way as to break through the image's upper frame; importantly, they are the only visual element to do so in this scene (Figure 9). In representing Apollo's *kithara* traversing the formal limits of the composition, the image suggests that the god's music may similarly follow the lines of his instrument and move past the frame to enter into the world that exists beyond the image.³⁶ Following the vertical line established by Apollo's lyre and its music takes us to the other side of the vase, where three young men exercise (Figure 10). In the center, a youth prepares to throw his javelin. To the right is a boxer who is identified by inscription as Ladamas. The figure to the left is a discus thrower. He too is identified, so that we know his name is Phaullos; he is further described as *kalos*.

identification of tonal concord with *harmonia*. Further discussion may be found in Pollitt 1974, 151-4; Mathiesen 1984, 264-79; Barker 2007, esp. 37f., 45-8, 309-11, 326, 329, 332-7. For a discussion of Apollo and *harmonia* in Classical vase-paintings, see Bundrick 2005, 140-50.

36 In conceptualizing how the god's music might move beyond the image, I draw from previous discussions on the role of the frame (Hurwit 1977, 1-30; Derrida 1987, 52-68; Platt and Squire 2017, 3-99; Marconi 2017, 117-53; Gaifman 2017, 392-424).



FIGURE 9 Detail

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Visual parallels occur between the scenes painted onto either side of the vase. In each, three figures are depicted, although the gods stand still while the young men move dynamically. The choice on each side as to which figures to identify by inscription also echoes the other: while Apollo, the central figure in this scene, is the only character who is identified, on the vessel's other image it is the two external athletes who receive further identification. In both scenes, the central figure's actions determine the positions of his two companions, who direct their attention back to the center of the scene. The large, swooping curves that constitute the body of Apollo similarly dominate the human sphere, showing off the athletes' rounded muscles as tight curls define their short hair. These coordinated resonances of *rhythmoi* and *symmetria* between the three male youths and the three gods are not a mere coincidence. Rather, I argue, we should discuss them with respect to Apollo's music, which has expanded beyond the divine scene and infuses both images with its sound. The young men, therefore, are not simply practicing their athletic tasks, but through their movements, they display the influence of Apollo and his music in their bodies. The god establishes *harmonia* both among the gods who are shown listening to his performance, and also among the young men, who themselves embody the youthful appearance associated with Apollo and whose *rhythmoi* have been arranged in a balanced proportionality with respect to each other. Visual *harmonia*, in this instance, is established through the implied musical *harmonia* of Apollo's music, so that image and music work together to impart the presence of Apollo throughout each scene and around the surface of the vase.

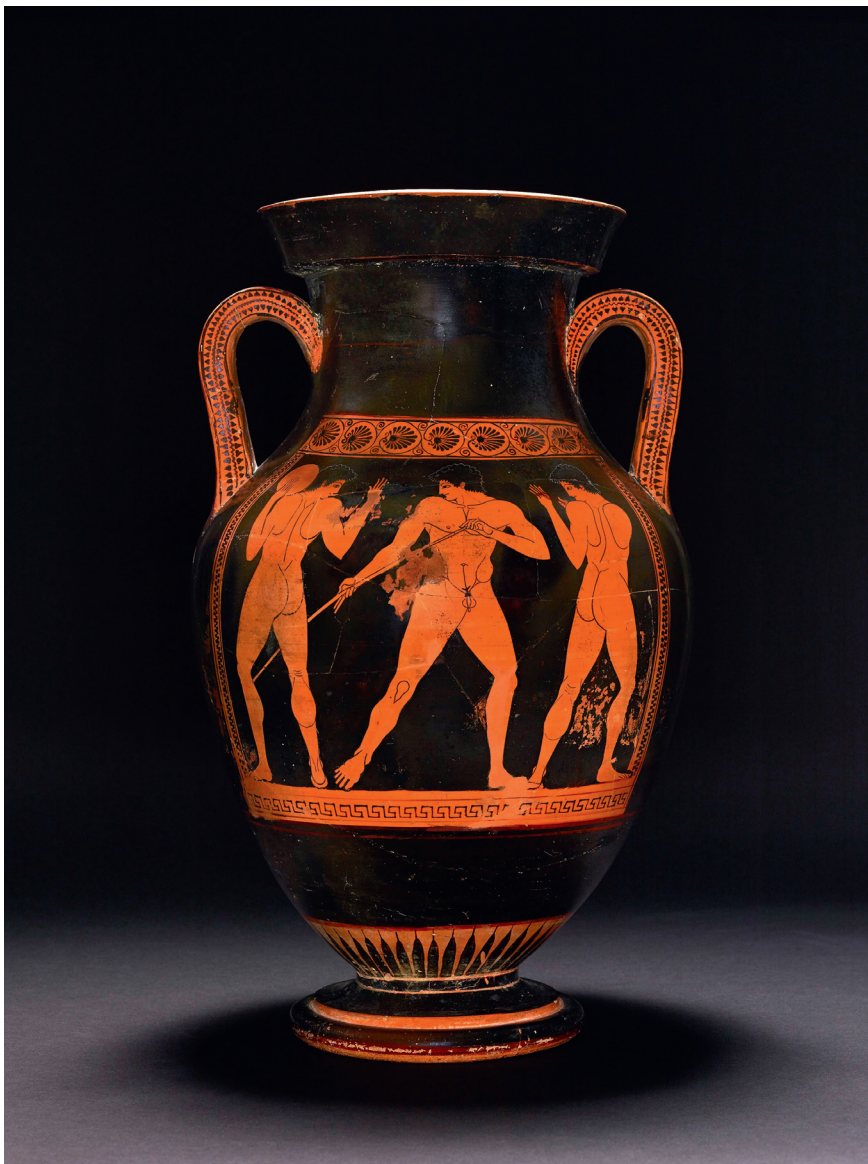


FIGURE 10 Side B

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The second detail that merits further discussion is the placement and representation of the panther within the scene of Apollo's music-making (Figure 11). Emerging from behind Artemis, the panther stands below the god's *plēktron*, directly in line with the long sash hanging from the *kithara*. Aside from closely



FIGURE 11
Detail

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associating the two divine siblings within the organization of the composition, the panther's face also engages the external viewer through its frontal position. In breaking the fourth wall of the image, the animal stares directly out of the scene, piercing its surface with its gaze. The animal confronts the external viewer who, of course, must stare back, so that the two are caught in a moment of mutual acknowledgement.³⁷ Given the animal's close proximity

37 For more on frontal faces on Greek vases, see Korshak 1987. On the importance of the viewer's gaze for interpretations of Greek vase-paintings, see Grethlein 2016, 85-106, and 85 n. 3 and 4 for earlier scholarship on this topic in art historical research more broadly.

to Apollo's *kithara*, which is also depicted as frontal facing and which similarly challenges the surface of the painted image, the panther's gaze works together with Apollo's music to draw in the audience. Not only does the god's music drift over to the other side of the vase, where the three mortal athletes display its effects upon their bodies, but it also expands out beyond the frontal boundary of the image, where it may be seen and imaginatively heard by the external, human viewing audience. It is through the direct confrontation between panther, *kithara*, and viewer that the image invites its external audience to move past what is strictly visual, and instead to imagine the sounds of the music that Apollo plays. Immaterial sound, created and heard by the divine in a world that is inaccessible to human listeners, becomes materially present both in the image and for those external viewers who encountered this vessel.

6 Conclusion

Apollo's music and the effect it has on his audience is repeatedly made visible for his viewers, who are invited to see how the sounds of the god's music affect and draw together his fellow deities. In communicating sound visually, each image explores the aesthetic tension between the evocative depiction of Apollo's performance and the particular quality of sound that we might associate with divine music: although Apollo's music is shown and described as being superlatively beautiful, it is only available to his human audience through its depiction in art or its description in poetry. We might even go so far to ask, when could a human man or woman ever really hear Apollo's music?

The images themselves offer one path by which we might find an answer to our question. By isolating our experience of Apollo to the visual realm, where we are invited to look closely at scenes of Apollo's musical performance, we are encouraged to see the sounds of his music as they are made manifest in the very composition of the image, in the relationship between musician and instrument, and in the positions of the figures. Each image also reaches out to its human audience, whose experience of listening-while-looking collectively activates Apollo's performance and, consequently, continually reaffirms the unifying character that is inherent to Apollo's music. In these scenes, Apollo's presence before his audience is established not just in the visual representation painted onto the side of a vase, but rather he is experienced in the viewer's perception of the scene, in that moment of seeing the god's performance, imagining its sounds, and hearing the music. The images thus repeatedly suggest that it is, above all, through the conflation of sensory perceptions, where

looking is a kind of listening and where the viewers are invited to hear the sounds that they see on a physical, material object, that Apollo and the sounds of his music are revealed.

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Music and the Divine

Introductory Remarks (MOISA Panel at the SCS Meeting in January 2019)

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Abstract

This paper serves to report on the MOISA Panel at the 150th Annual Meeting of the *Society for Classical Studies* dedicated to the theme 'Music and the Divine', and to introduce one of the papers presented at the panel.

Keywords

music – divine – gods – ritual – Plato – Epicurus – Lucretius – Aelius Aristides

Many literary and philosophical sources throughout antiquity and beyond attest the view that music serves as a connection between human and supernatural realities. However, speaking of 'music' in the common meaning of vocal and instrumental performance, one would have reason to expect music rather to be an intrinsically human matter. For music presupposes both the human hearing apparatus and brain and a liquid medium such as air to transport sound waves. How could we imagine music to function or be relevant in a world beyond the earth, be it envisioned as supra-lunar sphere or as the Christian heaven with angels singing who, contrary to popular imagination, do not have bodies?¹

The ancients were not plagued by such difficulties, in part because they are anachronistic and because mythology is not concerned too much with the physical implications of its narrative, but especially since μουσική, as is well known, is an equivocal term: it can mean the actual music performed, poetry

1 See Thomas Aquinas, *Summa Theologiae*, I, q. 50, a. 1.

in general, the theoretical structure of a composition or its analysis, the mathematical aspects of musical phenomena or philosophical studies about harmony and human *ēthos*.² The term ‘divine’ is polysemic as well, for it might refer 1) to a divinity (god in a polytheistic context, and in Greek-Roman mythology a being that is super-human—immortal and bestowed with particular powers—but in many ways similar to humans or, in the Judeo-Christian-Islamic context of monotheism, God, ontologically and essentially distinct from the world he himself has created), 2) to something related to a divinity as proceeding or directed to it, or 3) to something human but of supreme quality (‘godlike’).³ ‘Divine’ is used here principally in the first two meanings.

Human musical production, despite its apparent belonging to earthly realities, seems to point higher. First, music is a prominent form or medium of worship in most if not all religions, either to offer a ‘sacrifice of praise’ to appeal to or please a divinity, or to experience the divine presence through musically performed ritual. Why is music particularly apt to convey religious experience? This might be explained by this mysterious power that music exerts especially on the emotions or, as the ancients would say, on the irrational part of the soul. The unfathomable nature of music, perceived as a supra-human power, appears to open channels in both directions: from the divine to the humans and vice-versa.

It has often been stated, even across cultures, that music as a whole is a ‘gift of the gods’.⁴ Not seldom do we find etiologies in literature that explain the divine origin of particular instruments and the association of specific divinities with instruments (such as the *aulos* with Dionysius, the *kithara*/lyre with Apollo, or the Pan-flute). Greek and Roman mythology is full of descriptions of the divinities engaged in musical celebrations.⁵ All this can be either seen as a projection of human music into the divine realm (which would be a more

2 There are multiple places that explore the various meanings of *μουσική*; among these, see e.g. Murray and Wilson 2004, 1-6; Kramarz 2016, 12-18.

3 These meanings are derived from the Merriam-Webster online dictionary as provided by *Britannica Academic*, entry ‘divine’ (<http://academic.eb.com/levels/collegiate/search/dictionary?query=divine&includeLevelThree=1&page=1>, last accessed September 6, 2019).

4 This is attested as early as in Homer (*Il.* 13.730f.). According to [Plut.] *Mus.* 14.1136b, “music is in all respects a noble thing, and the invention [ἐῴρημα] of the gods”, and Augustine says that *musica* [...] *mortalibus rationales habentibus animas Dei largitate concessa est* (ep. 166.5.13). See also Quasten 1983, 1.

5 I limit my reference here to one very early and one very late author: Homer’s *Iliad*—and with it essentially Western literature—begins famously with the phrase “Sing, goddess!” (see also *Il.* 1.603f.: Apollo and the Muses perform at a banquet of the gods); in the last quarter of the fifth century AD, a whole book of Martianus Capella’s *De nuptiis Philologiae et Mercurii* deals with divine musical performance.

modern view but exists already in the agnostic criticism of pagan religion in Lucretius, as mentioned below), or there is indeed a divine prototype of what human music is meant to be. Human musicians are often described as ‘divine’ or ‘divinely inspired’ (in the second and third meaning of ‘divine’ above; e.g. Homer *Il.* 8.499, 17.359). The musical genius, similar to literary or artistic production, seems to have its origin in super-human powers, be they the very Muses or other divinities. Music appears to be something one receives, at times even in a state of a consciously uncontrollable frenzy or *μανία*, rather than a mere human skill (see Plato’s *Ion*).

On an even higher and more abstract level, from the Pythagoreans down to Aristides Quintilianus and beyond, music is described in mathematical terms and proportions that are reflective of realities of harmony present in the cosmos at large, such as planetary movements (the ‘Music of the Spheres’),⁶ to which the structure and dynamics of the human soul should be aligned by means of experiencing corresponding tonal music.⁷ Carried on to their last consequence, the supernatural musical (or harmonic) realities become the *analogatum princeps* for human music. Even though these cosmic speculations are usually not super-natural or transcendent in a strict metaphysical sense, they still suggest that music touches something bigger than the simple production and perception of some specific kind of sound.

This multifaceted relationship between music and the divine in Greco-Roman antiquity has not been the object of any major recent study and would be worth a more systematic discussion.⁸ As a step to instigate such reflection, MOISA sponsored a panel on ‘Music and the Divine’, which took place on January 5, 2019, at the celebratory Sesquicentennial Annual Meeting of the Society of Classical Studies. As to be expected, papers were submitted that approached the theme from quite different angles. Four papers were presented, which addressed various levels at which the ‘divine’ could be perceived: either as personal divinities to which music can be directed (first and fourth), or as an impersonal-cosmic or pantheistic harmonious order in the Platonic sense (second), or even in an ‘a-theistic’ sense, stating the absence of anything divine in music (the third).

The current issue of *Greek and Roman Musical Studies* includes only one of the four papers—the other contributions might be published at a later date. Therefore, I will now present a brief summary of the panel and thus provide

6 See, for instance, the famous *Somnium Scipionis* in Cicero’s *De Re Publica* book 6.

7 This conception appears notoriously in Plato’s dialogue *Timaeus*.

8 Among older publications, one may mention Sendrey 1974, and Quasten 1983 (first published in 1929).

context for the one paper contained in this issue, which was in fact the first one presented.

Since cultic ritual is one of the earliest and most consistent appearances of music, Pavlos Sfyroeras (Middlebury College, Vermont) opened the session by discussing the function music plays in the relationship between the Greek gods and human beings. He did so by contrasting music with the role of the sacrifice, which often appears in the context of music. Literary and artistic evidence documents the notion that sacrifice (such as slaughtering animals or libations) divides humans and gods: the gods neither perform sacrifices themselves—being the ones to whom they are offered—, nor do they participate in sacrificial banquets, after Prometheus brought about the end of human and divine commensality. Music, on the other hand, serves as a unitive factor, as it summons the divinity, elicits a shared pleasure, invites both divinities and humans to common performance, and thus blurs the separation between gods and humans by creating an ‘illusion of sameness’. In short, music and sacrifice become correlatives with opposite effects.

A different kind of correlation between divine (or cosmic) and human realities was introduced by Spencer Klavan (Magdalen and Exeter Colleges, Oxford, U.K.) in his paper entitled *Movements Akin to the Soul's: Human and Divine Mīmēsis in Plato's Music*. In contrast to other commentators on the subject,⁹ Klavan suggested that the perfect abstract mathematical-harmonic structures of the universe and human musical ‘depictions’ of human *ēthos* are in fact not disjointed, but interconnected realities: the harmonic movements of the World-Soul (‘cosmic music’) is ideally reflected in similar movements of the human soul and gives them its *ēthos*, which finds expression in human language. The latter, for its part, is mimetically represented in human music. According to Klavan, we can gain an idea of these resemblances by reading what Plato's *Cratylus* reveals about musical *mīmēsis* together with what the *Republic* says about music resembling human speech. The objection that it may be hard to imagine how human music should practically achieve the resemblance of cosmic movements reflected in human speech as an expression of the soul's *ēthos* that is attuned to the cosmic soul's harmony should not detract from Plato's intention to postulate such a connection.

A contribution from the opposite side of the ancient music-philosophical spectrum was offered by Noah Davies-Mason (Graduate Center of the City University of New York) with the Epicurean view on the origin and purpose of music. The apparent tension between Epicurus' appreciation for theater and

9 In particular Andrew Barker, Edward Lippmann, and Séline Gülgönen.

its music, and his rejection of deeper serious reflection on it, is resolved by the fact that the Epicurean ideal of quiet or pleasurable sound to attain *eudaimonia* detaches music from divine profundity—where only silence rules—and relegates music to mere human entertainment or βωμολοχία (buffoonery). In particular, the paper made the case that Lucretius corrects the traditional notion of rather noisy divinities and renders them silent, while the origin of music is to be found in the natural sphere without any divine involvement.

The last paper, presented by Francesca Modini (King's College, London, U.K.), returned to the discussion of music within ritual, this time with Aelius Aristides and contemporary inscriptions attesting the liveliness of musical performances in Greek worship of the imperial period, during the second century AD. Aristides, a prominent member of the Second Sophistic, composed cultic hymns and paeans himself, as he tells in his *Sacred Tales*, and the god Asclepius recommended choral performances for Aristides' health to recover. Modini suggested that the loss of almost all of the imperial sacred poetry, including Aristides', could be explained by its frequent practical use in performance as opposed to the fixation of a literary tradition that occurred during Hellenistic times; the texts might simply not have been published at all. In the second part of her paper, Modini discussed Aristides' *Eleusinian Oration* 22, which bemoans the destruction of the Eleusinian sanctuary in 170 AD, and explains the purpose of invoking three ancient musicians (Orpheus, Thamyris and Musaeus) and the mention of an 'Argive dirge' (i.e. the lament for Linus) as a reference to 'communal lamentation' and other mystery cults that included rituals of grief.

Thus, the panel offered insights into the role of music in Greek cultic traditions of early and later times, and also two very different conceptions of the role of music as such, either as a cosmic-divine power that may render the human soul harmonious with the whole universal order, or as a simple human activity to provide enjoyment, while the gods remain silent or even absent. It is hoped that this will only be the beginning of a renewed reflection on the interconnectedness between the Human and the Divine through music.

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The Music of Sacrifice

Between Mortals and Immortals

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Abstract

The widely attested use of music in sacrificial ritual invites us to consider how it shapes the participants' perception of both. I argue that ritual gestures and musical accompaniment complement each other to define the parameters of the divine presence in the cultic moment. On the one hand, in light of Hesiod's canonical aetiology, sacrifice divides mortals and immortals, as they partake of different parts of the sacrificial victim. On the other hand, according to our various literary sources, music elicits identical responses from gods and men; human pleasure, in fact, is projected onto a divinity that is understood as fully present among the human spectators and/or performers. A corollary is that in visual and literary depictions divine musicians serve as models for what is essentially a human activity. While gods are imagined as recipients of sacrificial offerings, it is only music that makes them into full participants.

Keywords

ancient Greek music – ritual function of music – sacrifice

1 Introduction

The use of music in cult is by no means an exclusively Greek phenomenon; given its occurrence across cultures, it may be easily taken for granted. I have no intention of speculating on the universal attraction of music to ritual or, perhaps more accurately, of ritual to music; such an endeavor would require expertise in more fields—musical anthropology, ethnomusicology and archaeomusicology, evolutionary psychology and neuroscience—than any

single person can claim, and at any rate it would be beyond the scope of this short paper.¹ I wish instead to focus on one aspect of the ritual function of music in the Greek context, namely its connection to sacrifice, and examine how that connection is understood from within the Greek tradition.² I argue that the coexistence of these two genres of performance, music and sacrificial ritual, shapes the participants' perception of both: ritual gestures and musical accompaniment complement each other to define the parameters of the divine presence in the cultic moment.

The link between music and sacrifice is amply attested through poetic diction from Homer onwards, as well as other literary sources, inscriptions of sacred laws, numerous vase paintings, and other archaeological evidence, including instruments and figurines of musicians dedicated in shrines.³ A portion of all that evidence is now conveniently collected in the second volume of the *Thesaurus Cultus et Rituum Antiquorum*;⁴ even a cursory look would leave no doubt as to the soundscape of the sacrificial sequence, especially in its standard alimentary form: music punctuates all the phases of *thysia*, from the *aulos* of the procession (*pompē*) to the singing at the feast. The only significant exception is the moment of the actual slaughter when instead of music we hear the shrill cry (*ololygē*). Song and dance are felt to be such an integral part of the ritual that their occasional exclusion must be explicitly prescribed, as in the inscription from the island of Thasos, dated to the early 5th century, which specifies that the sacrifice to the Nymphs and Apollo Nymphēgetēs is not to include the singing of paeans (οὐ παιωνίζεται).⁵ Even allowing for such variations by cult, deity, or locality, one cannot deny the overall picture, which leads Herodotus (1.132) to point to the absence of the *aulos* as one of the differences

1 For recent evolutionary perspectives on song and its connection to ritual see the essays in Bannan 2012, especially Dunbar 2012 and Merker 2012.

2 It would be impossible to offer here a full treatment of Greek sacrifice, its typology, literary and artistic representations, and such persistent problems as, most notably, the role of violence. For a particularly useful recent survey of methodological issues and relevant bibliography see Parker 2011, 124–70. Van Straten (1995) and Gebauer (2002) collect and analyze visual depictions, while various approaches are represented in the essays gathered by Georgoudi, Koch Piettre, and Schmidt 2005; Mehl and Brulé 2008; Faraone and Naiden 2012, among others.

3 The reassessment of the concept of 'sacred law' in the last decade (cf. <http://cgrn.ulg.ac.be>) does not affect the present argument. While the music-related dedications are difficult to interpret, their presence is cumulatively significant.

4 *ThesCRA* 2.4.c. See also Nordquist 1992; Brand 2000; Gebauer 2002, 173f, 481f., 488.

5 *IG XII* 8.358 = Sokolowski 1969, no. 114. Even here, however, the interdiction of paeans does not necessarily mean the absence of music in general. The exclusion of the *aulos* from sacrifices on Tenedos and Paros is presented in our relatively late sources (Plut. *Quaest. Graec.* 297d-e; *Praec. san.* 132e-f; [Apollod.] 3.15.7) as atypical and in need of explanation.

between Persian and Greek sacrifices. But if we are to understand the semantic and pragmatic interaction between music and sacrifice, we first need to look beyond possible variations and compare the ways in which each component of the ritual articulates the relationship between mortals and immortals.

2 Sacrifice Brings Gods and Men into Contact but Cannot Close the Gap

On the face of it, sacrifice serves as a vehicle for communication between the human and the divine sphere, as stated by Plato (*Smp.* 188b-c, 202e; *Euthphr.* 14c-e). But while it connects, sacrifice also divides, by ultimately confirming the separateness of mortals and immortals. In fact, the very communicative or conjunctive function of sacrificial ritual brings into focus its presupposition: the divide between gods and men. Hesiod's canonical aetiology of Promethean sacrifice (Hes. *Th.* 535-61, esp. 535, 556f.), famously elucidated by Jean-Pierre Vernant and others, offers a programmatic account of this distinction and emphasizes the fundamental distance between mortals and immortals, as they partake of different parts of the sacrificial victim: the smoky fragrance of whatever is burnt, including the thighbones wrapped in fat, on the one hand, and the rest of the meat that is consumed by men, on the other. Prometheus puts an end to the earlier commensality, as described in a fragment from the Hesiodic *Catalogue of Women*: 'For at that time common were the meals (δᾶιτες), common were the seats (θόωκοι) for the immortal gods and mortal men' (fr. 1 Merkelbach-West = 82 Rzach). From now on, gods are invited to attend sacrifices and are assumed (or, better, hoped) to do so, but without violating the basic principle of that division.⁶

Let us consider some examples which may be and have been cited as showing that gods are full co-participants, but which, upon closer inspection, only confirm the ritual boundaries. In the land of the Phaiakians, Alkinoos raises the possibility that the unknown guest might be a disguised immortal, although, in his words (*Od.* 7.201-3),

6 Vernant 1989; see also Nagy 1979, 213-21; Parker 2011, 125. Vernant's seminal approach has been nuanced by, e.g., Durand 1986, Bruit Zaidman 2005, Svenbro 2005, Berthiaume 2005; despite some misgivings on particulars and a stronger emphasis on men's communication with gods, it is fully affirmed by Parker (2011, 124-44), who stresses the "radical divide ... between the two species" (141); sacrifice enables humans "to communicate with the gods across the great divide" (141) but cannot erase it, as "the difference in nature between man and god [is] irreducible" (142-4).

αἰεὶ γὰρ τὸ πάρος γε θεοὶ φαίνονται ἐναργεῖς
 ἡμῖν, εἶτ' ἔρδωμεν ἀγακλειτὰς ἑκατόμβας,
 δαίνυνταί τε παρ' ἄμμι καθήμενοι ἐνθα περ ἡμεῖς.

The gods have always appeared *clearly* to us in time past, when we perform famed hecatombs, and feast *by our side*, sitting exactly *where we also sit*.

As Zeus has already declared, the Phaiakians are ‘near the gods in origin’ (οἱ ἀγχίθεοι γεγάασιν, *Od.* 5.35), so their feasts are exceptionally graced by the presence of gods, who however do not necessarily share the food.⁷ Similarly, though a bit more ambiguously, Poseidon goes to the far-away Aethiopians to receive a hecatomb of bulls and rams and ‘rejoices there sitting by the feast’ (ἐνθ' ὃ γε τέρπετο δαιτὶ παρήμενος, *Od.* 1.26). The dative δαιτὶ could tantalizingly depend on τέρπετο or go with the participle. The latter (‘sitting by the feast’) keeps the distinction clearer, but even the former can be taken to mean simply that Poseidon relishes the part of the *dais* that belongs in a god’s diet.⁸ This arrangement may be envisioned like the last meal that Odysseus and Calypso share (*Od.* 5.194–202), one eating such food as mortals consume (οἷα βροτοὶ ἔδουσι), the other ambrosia and nectar. Although this occasion is not sacrificial, it follows the same combination of emphatically different nourishment and common circumstances: same space, same gestures, same pleasure.⁹ Such instances, not accidentally situated on the margins of the human condition, are clearly meant to test the limits of the permissible—yet even there, poetic language stops short of explicit commensality, in apparent recognition of the present order.

Concerning the standard alimentary sacrifice, therefore, we can speak of divine participation only in a limited sense. That arrangement stands in constructive contrast to the ceremonies of the *theoxenia* type that are attested for

7 See Parker 2011, 139f.; he also adduces Pind. *P.* 3.93–5, where the gods ‘feasted at the side of both [i.e. Peleus and Cadmus]’ (δαίσαντο παρ' ἀμφοτέροις)—yet the food is tellingly left unspecified.

8 We find similarly careful formulations in *Il.* 1.423f. (Zeus and the other gods go to the Aethiopians κατὰ δαῖτα), *Il.* 23.205–7 (Iris), and *Od.* 3.435f. (Athena). Parker (2011, 141) rightly calls attention to the interpretation found in *Ath.* 8.863d–f.

9 This seems to be the underlying model for *Od.* 3.51–68: Athena disguised as Mentor pours a libation and joins the others in eating, but verse 66 refrains from explicitly stating what Athena ate, allowing that they each ate what was appropriate to them. The distinction between circumstances and nourishment is not always observed in scholarship; see, e.g., Bruit 1989; Ekroth 2011, 17 n. 7.

Delphi, Acragas, Athens, and elsewhere, where particular gods are presumed to attend in the manner of guests and share the same food (including meat) as mortal worshippers.¹⁰ Besides this ritual variation that creates a more intimate community between gods and humans than the standard *thysia*, animal sacrifice is also subjected to philosophical critiques (Orphic, Pythagorean, Empedoclean) precisely on this very point, the separation of mortals and immortals.¹¹ It would be beyond the scope of this essay to elaborate on the specific, often radical and idiosyncratic, attempts made by the adherents of such cults and/or philosophical schools to circumvent the apparent sacrificial obstacle to a unitive experience. I only wish to submit that the same yearning that leads these marginal groups to abolish sacrifice altogether finds widespread but subtle expression also in music.

3 Music Unites Gods and Men

Contrary to the division in Promethean sacrifice, music compels gods and men to respond to it in similar, even identical ways: just as humans find pleasure in music, the Olympians' love for it is a given in poetic accounts from Homer onwards. The hecatomb for Apollo that inaugurates the series of sacrifices in the *Iliad* (*Il.* 1.447-74) is not complete until the Achaeans spend an entire day (πανημέριοι) propitiating the angry god with song (μολπῇ), by intoning the beautiful paean (καλὸν αἰείδοντες παίηονα ... μέλποντες); it is in these sounds, in fact, that Apollo is specifically said to rejoice (τέρπετ' ἀκούων, 1.472-4).

Consequently, in performative genres, which enact their own utterances, gods are called to the performance on the strength of its aesthetic appeal. Walter Burkert puts it succinctly when he observes that "the cult in no way demands the repetition of ancient, magically fixed hymns; on the contrary the hymn must always delight the god afresh at the festival".¹² But we can take this one step further when we note how divine participation helps create, and is created by, the aesthetic moment: in Pindar's dithyramb for the Athenians (fr. 75 Maehler), for instance, the chorus invites the Olympians to join its

10 On *theoxenia* and related practices see, especially, Jameson 1994; Svenbro 2005; Berthiaume 2005; Cursaru 2007; Ekroth 2008 and 2011; Parker 2011, 142-4. Bruit (1989) points to some mythical models underlying *theoxenia*. On the parallel practices designated as *trapezōmata* see Gill 1974 and 1991; Ekroth 2011.

11 Cf. Vernant 1989, 50f.; Detienne 1989, 5-8; in more detail, Bruit Zaidman 1993; Detienne 1994, 37-59.

12 See Burkert 1985, 103. I would venture that that this contributed to the spread of musical and poetic contests.

current choral song as it is taking place and to envelop it with their χάρις. In other words, this very attribute of the performance, as it is experienced by performers and audience, signals the presence of divinity.

We find an analogous convergence of human and divine responses to the same performance in the Hymn to Zeus of Mount Dicta, recorded on a later (3rd century CE) inscription from Palaikastro in eastern Crete but probably originating in the early Hellenistic period, if not earlier.¹³ In the opening of the hymn, the Dictaeon Zeus, addressed here as the 'Greatest Kouros,' is urged to rejoice in the song (γάγαθι μολπᾶ) of the Kourētes around the well-built altar (1-10). Although the *bōmos* marks the occasion as sacrificial, the performers, presumably impersonating the Kourētes, figures of armed youths in myth, invite the divinity by stressing their own song woven together with harps and mixed with pipes.¹⁴ The pleasure of dancers and spectators alike in the song is projected onto the divine recipient.

In this and a number of other examples, it is significantly the music, often combined with dance, that summons the deity to the cultic occasion. Thus Bacchylides (fr. 21 Maehler) has his chorus entice the Dioscuri to the Theoxenia by means of the 'sweet Muse' (Μούσα ... γλυκεῖα), emphatically contrasted with 'bodies of oxen' (βοῶν ... σώματα).¹⁵ Similarly, in the 4th century CE, Himerius (*Or.* 48.10f.), paraphrasing Alcaeus' hymn to Apollo (fr. 307 L.-P.), narrates how the Delphians, seeking to attract the god from the Hyperboreans, composed a paeon and a tune (παιᾶνα συνθέντες καὶ μέλος) and set up choruses of youths around the tripod (καὶ χοροὺς ἡϊθέων περὶ τὸν τρίποδα στήσαντες).¹⁶ Alcaeus' hymn, of course, would be an instance of such a paeon. The underlying assumption here is that the performance of song is experienced as divine presence.

The self-referentiality reaches a climax when the deity is identified with the current song, as (for example) in the later paeon of Philodamus of Scarphea (fr. 39 Käppel).¹⁷ The opening strophe (1-13) is explicit in evoking the god Dionysus in the guise of the song itself, designated both as a paeon and a dithyramb. Regardless of its generic classification, Philodamus' poem was intended

13 *Inscr.Cret.* III 2.2. For recent discussions see Furley and Bremer 2001, 1.68-76, 2.1-20; Alonge 2011, 221-8, 230-3.

14 The term 'harp' here translates *pēktis*, on the exact nature of which see Furley and Bremer 2001, 2.11f.; Maas and MacIntosh Snyder 1989, 40f.

15 The divine addressee and the cultic context are furnished by *Ath.* 11.500a-b; cf. Parker 2011, 142f. The preference for song over sacrifice in Bacchylides' fragment seems to be inscribed within a broader dismissal of markers of wealth. It is projected onto Apollo in a later (3rd c. AD) hexameter oracle from Didyma, on which see Rutherford 2013, 237f.

16 Cf. Furley and Bremer 2001, 1.99-102, 2.21-4. Of course, the extent of Himerius' paraphrase must remain an open question.

17 For full discussions see Käppel 1992, 207-84; Furley and Bremer 2001, 1.121-8, 2.52-84.

for performance in conjunction with the sacrifice at the Delphic Theoxenia (cf. 110-4; see also 3f.).¹⁸ In this atmosphere of 'theoxenic' communion between man and god, the performance of the choral song crystallizes the divine presence: indeed, the synthesis of sonic and kinetic stimuli *is* the god, whose birth prompts immortal dance and human joy. The gods' dancing and the mortals' rejoicing, evoked on the level of myth, strikingly reverse the ritual occasion in which it is human performance that causes divine joy. Dance and joy, chiasmatically bridging gods and men, blend even in the *paronomasia* created by *χόρευσαν* and *χάρεν* *σαῖς* (8-10) and reinforced by the identical metrical and musical pattern of the two verses.¹⁹

The implications of this fusion of human and divine responses are already evident in the *Homeric Hymn to Apollo* (140-73), where spectatorship virtually transforms a human audience into a divine one—'immortal and ageless' (*ἀθανάτους καὶ ἀγήρω*s, 151). That is how a second-level observer, one looking on the Ionian spectators gathered on Delos, would describe them, beholding their *χάρις*, often (as we saw) an attribute with a divine source.²⁰ This *χάρις* would induce in the heart of that observer—i.e. the poet and even us—the very same pleasure (*τέρψαιτο θυμόν*, 153) that Apollo himself feels (*ἐπιτέρπει ἦτορ*, 146).²¹ The loop of joy is complete when the poet addresses the Delian choir and suggests that they find the most pleasure in *his* song (*τέω τέρπεσθε μάλιστα*; 170). The Delian festival, in short, blurs the distinctions between mortals and immortals, by assimilating the god to human spectators inside and outside the hymn. Even though the poet has the Muses emphatically reaffirm, in their Olympian song (189-93), the unbridgeable gulf between mortals and immortals, human performance of music and dance creates, at the very least, a momentary illusion of sameness.²²

It thus comes as no surprise to hear Plato, beautifully (as so often) distilling the tradition but also taking it one step further, describe the gods, especially Apollo, Dionysus, and the Muses, as 'dance companions and leaders of our choruses' (*συγχορευτάς τε καὶ χορηγούς*, *Lg.* 665a; cf. also 654a). In the Athenian Stranger's vision, we are currently joined by the gods not merely as fellow

18 On these lines see esp. Käppel 1992, 209-11; Furley and Bremer 2001, 2.60f., 77f.

19 For other aspects of the passage see Käppel 1992, 226-32. The *paronomasia* may hide the perception of a possible etymological connection, which is made explicitly in Plat. *Lg.* 654a4f., as we will see below.

20 The observations offered by Lonsdale (1993, 65-8) complement the ones presented here. See also Clay 1989, 46-56.

21 Dover (1993, 277) sees in Ar. *Ra.* 675 a similar 'dialectic' of human and divine pleasure; cf. Xen. *Hipp.* 3.2.

22 On the passage see Richardson 2010, 112f.

spectators, as is the case in the *Homeric Hymn to Apollo*, but actually as fellow performers. In fact, that very companionship (note the prefix συν-) is the source of our sense and enjoyment of rhythm and harmony and, consequently, of the etymological link that Plato discerns when he derives χορός from χαρά (*Lg.* 654a4f). What is more, we are granted the gift of gods as ‘fellow-celebrants’ (συνεορταστάς) by the gods themselves who, motivated by pity (οἰκτίρραντες, ἐλεοῦντας) for the human condition, try to provide some relief and rest from our labors (653c-d).²³ While Plato does not explicitly exclude sacrifice, which may be part of *heortē*, he places undisputed emphasis on the song and dance in festivals, hence the gods he singles out define συνεορταστάς more narrowly as συγχορευτάς. By the same token, the act of dancing jointly colors the experience of celebrating jointly, so that the festival occasion as a whole, built around music, may compensate for our suffering and partly close the gap between mortals and immortals.

As the divine participation in *choreia* appears to permeate the entire *heortē*, it may even affect the feast itself, thus transforming the typical divine diet. In Pindar’s *Sixth Paian* (fr. 52f), the chorus addresses the island of Aegina, personified as the divine recipient of the poem’s last triad, with the promise: ‘for this reason we shall not lay you to rest without a feast of paeans’ (οὔνεκεν οὐ σε παιγιόνων ἄδορπον εὐνάζομεν, 127). This striking phrase, with its performative future, clearly implies that the current song, at least its last triad, is a form of sacrificial feast. Moreover, by serving also as a god’s meal, the music of this paean makes the Delphic Theoxenia, the setting of its performance, into an occasion of true commensality, both human and divine.²⁴

These passages—one could of course adduce more—suffice to establish the point: unlike the division created by sacrifice, there is no evidence for any differentiation in the divine and human responses to music, as these are presented in our sources. On the contrary, music, including music performed in sacrificial contexts, re-unites gods and men, mending the rift produced by the Promethean arrangement. From a diachronic perspective, the commensality produced by music is projected onto a mythical past, before the present order of the Promethean division.²⁵

23 On these passages see Lonsdale 1993, 31f., 47f., and the essays in Peponi 2013, especially Kurke 2013 and Kowalzig 2013.

24 On Pindar’s *Sixth Paean* see Furley and Bremer 2001, 1.102-16, 2.24-37; Rutherford 2001, 324f.; 2013, 244f.; Kurke 2005; Cursaru 2007; Kowalzig 2007, 181-223.

25 In the earliest Chinese work on the power of music, the *Yueh Jih* (2nd c. BC), we find a strikingly parallel comparison between music as uniting and ritual as differentiating, albeit only on the human level; see Pian 1997, 253f.

4 Divine Models

Let us then return to Plato's concept of fellow performers, which can help us illustrate further the divergence between the sacrificial and musical components of ritual. It is important, in other words, to take note of the fact that music has a divine prototype, but sacrifice does not. The epic scenes of musical or choral performances on Olympus, starting with e.g. *Il.* 1.601-4, or the representations of gods playing instruments on vases offer divine models for what is essentially a human activity.²⁶

By contrast, sacrifice may by definition be performed only by mortals, as demonstrated by the young god's behavior in the *Homeric Hymn to Hermes* (126-33). Hermes starts preparing the feast and is powerfully struck by the sweet savour—will he react like a god or like a mortal? His 'identity crisis', in the words of Jenny Strauss Clay, is resolved when he resists the impulse to gulp the meat down his holy throat, and that test earns him his divinity.²⁷ This episode clearly confirms the gulf, the distinction between human and divine diet. Hermes kills, but does not eat the human portion, because this would prevent him from acquiring divine honor (*timē*). By avoiding sacrificial terminology here, the poet takes pains to emphasize that it would be improper for an immortal—albeit not yet recognized as such—to play the part of a mortal. Even the god of passages, in other words, cannot become a divine model for humans performing sacrifices, so as to bridge the gulf between the two spheres; on the contrary, this scene upholds the principle that sacrifice creates two separate audiences; only music unifies them into one.

5 Vase Paintings and the Problem of Libation

Things become a little more complicated, however, when we consider libation, the ritual act of pouring liquid, usually wine, on the ground; this everpresent gesture takes several forms and accompanies various cultic occasions, not least sacrifice, both to mark the beginning of ritual and to conclude it, with wine poured over the flames (e.g. Eur. *Ion* 1032-3). The puzzle, in brief, is the following: in addition to gods represented as playing instruments at apparently ritual

26 See, e.g., Lonsdale 1993; Kurke 2013; Peponi 2013a. For divine musicians on vase paintings see Brand 1999, 100-13.

27 This episode has puzzled a number of scholars. The interpretation of Clay (1989, 116-24) is fundamentally correct; see also Patton (2009, 111-13), who is right to point out that the fragrance constitutes Hermes' portion and to adduce *Il.* 4.48f.

occasions, indicated by altars and similar symbols, we also find images of gods pouring libations. Interestingly, more often than not, painters combine these two activities. To take a couple of examples from the first quarter of the 5th century, a red-figure kalpis by the Berlin Painter (MFA 1978.45, returned to Italy in 2006) shows Apollo with phiale (about to be filled or already emptied) and kithara over an altar. Or we may recall the famous white-ground kylix in Delphi (Delphi Museum, 8140), which shows seated Apollo holding a lyre and pouring from a phiale.²⁸ Leaving aside the theological ramifications of divine reflexivity, i.e. of gods performing ritual addressed to themselves as divine recipients, what are we to make of such depictions regarding the ability of gods to serve as models for musical and ritual performance? Don't these depictions collapse and invalidate the distinction we observed earlier?

I would argue that they do not—for the following reasons. First of all, out of the over three hundred such images, listed and studied by Kimberley Patton (2009), only one from the 6th-5th centuries can be termed properly sacrificial: a black-figure olpe from the early 5th century (Ferrara, Museo Archeologico Nazionale, 14939), which shows Athena in the act of roasting meat on a spit and pouring a libation. Even though Patton lumps together libation and sacrificial ritual, the fact remains that this sole exception of a sacrificing god, whatever the explanation, proves the rule.²⁹ Second, our literary sources often pair libation with the fragrance of burning fat (*knisa*) as divine offerings, especially when humans need to propitiate the gods. We may recall the Homeric formula that is used by Zeus (λοιβῆς τε κνίσης τε, *Il.* 4.49) and Phoenix (λοιβῆς τε κνίσῃ τε, *Il.* 9.500) and is then slightly expanded by Plato's critical Athenian Stranger (λοιβῆς τε οἴνου κνίσῃ τε, *Lg.* 906d).³⁰ What *loibē* and *knisa* have in common is that they are accessible to gods exactly as much (or as little, in the case of libation) as they are to humans. In that respect, libation resembles music: unlike the sacrificial animal, both libation and music are experienced by gods and men in identical ways, so both have divine prototypes for what is essentially a human activity; therefore, they can be combined on vase paintings.³¹

28 On the interpretation of the kylix, first published by Konstantinou (1970), see Metzger 1977 and, more recently, Gaifman 2013.

29 This is discussed by Patton 2009, 44f. Following and supplementing the pioneering work of Simon (1953), Patton makes a major contribution by inscribing these images within a range of cross-cultural parallels and by offering a rich theoretical frame, but her conflation of sacrifice (i.e. ritual slaughter) and libation glosses over some significant nuances.

30 Cf. Patton 2009, 28, 52.

31 All that comes neatly together in Pindar's *N.* 11, composed for Aristagoras' installation as prytanis of Tenedos. The ode begins with an invocation to Hestia, who is asked to welcome Aristagoras and his *hetairoi*. They in turn worship her with libations and fragrance (λοιβαῖσιν ... κνίσῃ, 6f.), as lyre and song resound for them (λύρα δέ σφι βρέμεται

6 Conclusion: the Case of Ismenias

Perhaps one cannot find a more fitting conclusion than the anecdote reported by Plutarch (*Quaest. conv.* 632c-d) about Ismenias, the most famous Theban musician: while he was playing the *aulos* at a sacrifice, there were no favorable omens, so the hire on hand took the *aulos*, played ridiculously, and answered the bystanders' reproach with the quip that 'to play the *aulos* agreeably comes from the gods'. To that Ismenias responded with a laugh: 'with my playing the gods were pleased and protracted the ceremony; but in their eagerness to get rid of you they accepted the sacrifice'.³² Good *aulos*-playing at a sacrifice pleases the gods who withhold auspicious signs so as to prolong their presence, but upon hearing inferior music, the gods allow the sacrificial slaughter to proceed, so that they can depart.³³ Far from trivial, this anecdote captures the divine perspective on the interplay between music that unites and sacrifice that separates, as that is experienced by humans: by alleviating our sense of sacrificial fragmentation, music serves as the glue ensuring that the fabric of our universe is not torn.

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και αἰοιδά, 7). The emphasis is on what unites gods and humans when Hestia receives the councilmen who become her priests—to be followed by reflections on mortality and the limitations of the human condition (*N.* 11.15f.).

32 The phrase σοὺ δ' ἀπαλλαγῆναι σπεύδοντες is a little ambiguous: in its context, it can mean either 'while you were playing, they—rushing to abscond—accepted the sacrifice' or 'they, rushing to get rid of you, accepted ...'. The former fits my reading better but is less likely; the latter is more likely and can still support the interpretation: music keeps the gods present, transfixed, side by side with the humans.

33 The auspicious sign means that the music will temporarily stop for the slaughter and its simultaneous *ololygē*, until it can recommence. This moment, which precludes pleasure human or divine, is perhaps conveyed by the non-playing aulete on a stamnos by the Eucharides Painter (Louvre C 10754; cf. *ThesCRA* 373). Moreover, the rare scenes depicting the moment of slaughter itself never feature a musician.

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'Tuning the Lyre, Tuning the Soul'

Harmonia, *Justice and the Kosmos of the Soul in Plato's Republic and Timaeus*

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Abstract

This paper will focus on Plato's thought-provoking depiction of justice as special kind of *harmonia* (*Resp.* 4.443c-444a) that epitomises the best possible organisation of the soul, exploring his nuanced use of the model of lyre tunings in performative, theoretical as well as educational terms. By comparing Plato's use of harmonic imagery with technical discussions of lyre tunings and their key role in educational settings, I will show how Plato exploited distinctive features of traditional Greek lyre *harmoniai* to give shape to his innovative understanding of the structure of the soul and the harmonious, but not strifeless, relationship between its individual components. In the second part of this paper, I will look at how the model outlined in the *Republic* sheds light on the musical structure that gives shape to the World Soul in the *Timaeus*, advancing a new interpretation of its elusive harmonic organisation.

Keywords

Plato's harmonics – *harmonia* – justice – lyre tunings – musical education – *Republic* – *Timaeus* – Philolaus

Plato's dialogues offer many revealing discussions of the ethical, political, psychological and educational importance that music had for the Greeks. This is especially true in the case of the *Republic* and the *Laws*, works which describe in detail the political set-up of two ideal constitutions as well as the lifestyle and ethical values embraced by their citizens. But Plato's interest in musical matters was by no means limited to these works or topics. On the contrary,

musical—and especially harmonic—notions play a central role also in his discussion of the orderly, but not strifeless, organisation of the basic constitutive elements of nature, whose dynamic interplay generates the universe (*kosmos*) that we inhabit.

In this paper, I shall explore Plato's distinctive use of a long-established musical model, that of the lyre *harmonia*, to give shape to his innovative conception of the soul and its ethical excellence, focussing first on the definition of justice offered in the *Republic* and subsequently on the structure of the 'Cosmic Soul'—or rather the 'Soul of the Whole'¹—described in the *Timaeus*. This discussion will show how Plato was far from uninterested in, or worse unaware of, the strictly technical and practical implications of the musical notions he employed in his works—charges that were already levelled against him in antiquity and continue to thrive in modern scholarship.²

On the contrary, this paper aims at showing that technical and practical features of ancient musical concepts played two crucial and related roles in Plato's works. On the one hand, these musical concepts offered an inventory of complex but flexible ideas that Plato embraced to give shape to key elements of his own thought such as the structure of the soul, its counterparts in the city and the universe at large, as well as their workings as composite and dynamic systems. On the other, they represented a kind of shared cultural language that Plato acquired in the course of his own education, and subsequently exploited to express his innovative philosophical views in terms that

1 What is known as World Soul or Cosmic Soul in scholarly literature is actually called the 'Soul of the Whole' (*Tim.* 41d), the 'Soul stretched through the Whole' (*Tim.* 34b), or simply the 'Soul' (*psychē*, *Tim.* 34b-c) in Plato's text. Unlike its modern counterparts, Plato's expression puts emphasis on the unity of the *kosmos*, which is conceived as a unitary living being that integrates in itself a variety of elements and is brought to life by the Soul and its *harmonia*. English translations are mine, unless otherwise noted, and will at times favour fidelity to the original over idiomatic elegance.

2 See e.g. [Plut.] *De mus.* 1136e14-39b4, where Aristoxenus rebuts the accusation that Plato made his selection of musical modes 'out of ignorance' (cf. Barker 2012). See also Arist. *Pol.* 8.1343a-b, with Lynch 2016. For a recent example of this prejudice, see Wallace 2015, xxii, endorsing Koster 1944: 'such trifles (*scil.* musical technicalities) were unworthy of a philosopher'. This dismissive attitude has fortunately started to reverse in recent years—see esp. Pelosi 2010 and Prauscello 2014, who offer insightful discussions of the philosophical roles played by musical ideas in Plato's psychology and ethico-political thought. These studies, however, do not take into account much recently discovered evidence about Greek harmonic theory and practice (esp. Hagel 2010 and Barker 2007). This illuminating technical evidence makes it possible to reconstruct confidently key aspects of the tuning systems and harmonic models developed in Classical times (cf. Lynch 2018), allowing us to understand more fully the role they played in shaping Plato's musical experience and thought.

his readers could relate to on the basis of their own aesthetic, emotional and cognitive experiences.

1 Musical Images, Myths and the Divine Power of Beauty: a Few Methodological Clarifications

Before getting to the heart of the matter, a few words are in order concerning some hermeneutic principles that inform my work. Generally speaking, my work is based on the belief that delving more deeply into the technical and aesthetic implications of the musical notions used by Plato sheds new and valuable light on important aspects of his thought. Just as, for instance, contemporary musical and scientific theories informed and shaped the development of Hegel’s or Descartes’ thought, I believe that having an awareness of the practical, aesthetic and theoretical implications that specific musical concepts and images had in Plato’s own cultural environment can help us better understand his sustained and deliberate use of such notions—as opposed to many other cultural or technical models that were available to him—to illustrate key elements of his thought.

But this does not entail that one should embrace a rigidly analytical mindset.³ A famous passage of the *Phaedrus* which concerns the nature of philosophical knowledge, and its fraught relationship with inexorably static written texts, cautions us precisely against trying to reduce the dialectical, life-infused reasoning of Plato’s dialogues to a set of dogmatic and unchanging statements or ‘theories’. The sad predicament experienced by one’s defenceless ‘children’/texts falling in the hands of such readers is significantly depicted by means of a musical expression:

Once it is written, the whole speech (*logos*) is tossed around equally to those who give ear to it and to those who, by contrast, do not care about it in the slightest; and it does not know whom it should talk

3 Broadly speaking, my work belongs to the family of the so-called ‘literary contextualist’ (Nails 1995, 24–6), or simply ‘literary’ readings of Plato’s works (Blondell 2000, 2002; Rowe 2007), as opposed to e.g. modern analytical interpretations (for this definition, see Rowe 2015; cf. Pelosi 2010, who offers a broadly analytical interpretation of Plato’s musical ideas). To put it simply, I seek to engage with Plato’s texts on their own terms and in the light of their own cultural context, without imposing arbitrary criteria of truth upon them—a hermeneutic approach that is grounded upon the ‘principle of charity or humanity’ (Davidson 1984), and aims to give justice to the intrinsically ‘exploratory and probing’ character of Plato’s texts (Halliwell 2002, e.g. 38, 56, 61).

to or not. And when its melody is struck up and made discordant (*plēmmeloumenos*), and it is unjustly reviled (*kai ouk en dikēi loidorētheis*), it always needs its father to come to the rescue: for it is has no power to defend or help himself.

Phdr. 275d-e

Other passages of the dialogue similarly emphasise the need to preserve the inner harmony of a discourse, taking into account also its effects on the soul.⁴ This awareness, and the related need for a hermeneutically sensitive and flexible approach, turns out to be especially crucial to acquire a true understanding of *logoi* about justice—that is to say, the central notion discussed in the present article:

You speak of a wholly beautiful game, Socrates, [...] proper to a person who can play and amuse himself with discourses, crafting myths about justice and the other subjects you talk about (*dikaiosynēs te kai allōn hōn legeis peri mythologounta*).

Phdr. 276a-e

Precisely as we are told here, Plato consistently approaches the concept of justice, the nature of the soul and the ultimate structure of reality by means of ‘myths’ and ‘images’—including not only the harmonic depiction of the just soul offered in the *Republic* 4 and its hyperbolic counterpart in *Republic* 10 (614b-621d), but also the great mythical palinode of the *Phaedrus* (243c-257b), the ‘long myth’ on the immortality of the soul in the *Phaedo* (107c-114d), its shorter counterpart in the *Gorgias* (522e-527e), and the ‘likely story’ about the Soul of the Whole in the *Timaeus* (*eikota mython*, *Tim.* 29c, 59c, 68d; *eikota logon vel sim.*, *Tim.* 30b, 48c-d, 49b, 53d, 55d, 56a, 57d, *passim*). By their own admission, these myths do not aim to offer precise, fully rational and comprehensive accounts of the nature of the soul and its relationship with justice and other kinds of ethical excellence; but the essence of these notions is not entirely disconnected from such mythical representations either—a tension that is beautifully expressed by Socrates in the *Phaedo*:

It would not be fitting for a person of *nous* to vigorously claim that these things are precisely as I have just described them; but that such things, or something like them, are true with regard to these souls of ours and their

4 E.g. *Phdr.* 271b, 268d-e, and 277b-c, with Lynch 2013.

abodes, given that the soul appears to be indeed immortal—this seems to me both fitting and worth risking for a person who suspects it to be so: for it is a beautiful risk.

Phd. 114d–e

In other words, these mythical images are figurative—but *not* ‘purely metaphorical’—representations: they are literary but truly mimetic ‘likenesses’ that allow us to capture in human and finite words something of the essence of immortal and divine ideas.⁵ The musical references and concepts employed in these mythical depictions are to be taken in this sense too: they are defining features of the poetic ‘mental pictures’ which allowed Plato and his contemporaries to envisage his boldly innovative and dynamic conceptualisations of justice and the soul *by virtue* of the ‘earthly’ notions and practices they evoked in their minds, not in spite of them.⁶

The only way for us to get a step closer to recapturing their experience is attempting to recover these echoes—the theoretical-cum-practical characterisations that ideas such as *harmonia* and *symphōnia* had in the cultural world of the Greeks—and let them resonate in our own minds and souls in response to Plato’s beautiful *mousikē*. In fact, in Plato’s view, musical *harmoniai* offered perceivable aesthetic embodiments of different facets of the awesome and divine beauty of wisdom (*phronēsis*), which is invisible to human eyes (Plat. *Phdr.* 250d–e) and joins reason with emotions in *euphrosynē*.⁷

2 In the Beginning There Was Harmony: Tuning the Lyre, Justice and the ‘Strings’ of the Soul in *Republic* 1–3

Musical practices, and specifically lyre playing, feature already in the first book of the *Republic* as models of technical competence conjoined with ethical excellence.⁸ At 1.349e, for instance, Socrates observes that a true *mousikos*

5 Cf. Plat. *Phdr.* 246a (on the soul), 250b–e (on justice and temperance, which may be glimpsed by our senses through earthly *eikonas* and their perceivable beauty).

6 Dismissive attitudes of this kind are embraced by e.g. Koster (1944) and Wallace (2015, xxii); cf. n. 2 above.

7 Cf. Plat. *Tim.* 80b, and the Appendix below, on the ‘euphoric’ delight (εὐφροσύνην) that intelligent listeners feel when listening to ‘the mimetic representation of the divine harmony that takes place in mortal musical movements’ (διὰ τὴν τῆς θείας ἀρμονίας μίμησιν ἐν θνηταῖς γενομένην φοράϊς). On the musical definition of *sōphrosynē* in *Republic* 4, cf. Lynch 2017.

8 In other dialogues, *aulos* playing too is mentioned as a model of purely technical competence, albeit not as ‘precise’ as lyre playing (cf. *Phlb.* 56a, *Lach.* 194e, *Ap.* 27b); unlike lyre playing, however, the technical competence of professional auletes and *kithara* players is mostly

would not desire to prevail over another musician, or literally 'have more than his fair share' of honour when tuning his lyre, reserving these reproaches to 'museless' or 'a-musical' individuals.

At first glance, this passage might lead us to wonder whether Plato ever set foot in a music school or theatre: already in Hesiod we read that rivalry and envy were defining traits of the relationships between Greek musicians as much as they are nowadays, and other amusing passages hint at the ruinous consequences of strife among chorus members and musical performers.⁹ But we would be mistaken if we assumed that Plato was simply ignoring the behaviour of his contemporaries to produce an idealised image of perfectly virtuous, but ultimately fictional, musicians. A close look at the wording of this passage reveals that Socrates is in fact not talking about a musical contest or performance, but about its preliminary requirement: tuning the instrument—a procedure that hinges on the act of 'tending' and 'relaxing' its strings, mutually adjusting their tension until they are perfectly harmonised to each other.

What tells musicians apart from their 'museless' companions is their shared knowledge of a well-defined model, as well as their ability to turn it into reality: the model of the lyre *harmonia* which, as we shall see, entailed very specific technical as well as aesthetic and theoretical features. It is precisely this kind of shared knowledge that will prevent potential conflicts from arising among true *mousikoi*: for the correctness, or the inaccuracy, of the relative pitch of a set of lyre strings can be readily judged on the basis of a clear paradigm, which is both intellectually satisfying and perceived by the senses as beautiful and pleasant.¹⁰ Hence such knowledgeable musicians, and their lack of greed (*pleonexia*), represented a perfect model for the collaborative expertise and ethical excellence proper to the future Guardians of Plato's ideal city. This point will become even clearer in *Republic* 4 where the central ethical principle of *Kallipolis*—justice—is defined as a special kind of psychological *harmonia*.

associated with ethically dubious goals (e.g. *Gorg.* 501d-502a), and not positive values such as justice and temperance.

9 Hes. *Op.* 25f.: 'potter begrudges potter, and joiner a joiner, a beggar is jealous of another beggar and a singer of another singer'. On the negative aesthetic effects of strife among chorus members, see [Arist.] *Pr.* 19.45.

10 The conciliatory role played by shared knowledge, which undermines *pleonexia* and brings about concord, political agreement and equality, is highlighted also in Archyt. fr. 3 Huffman: 'once logical calculation (λογισμός) was discovered, it stopped civil strife (στάσις) and increased like-mindedness (ὁμόνοιαν δὲ αὖξηεν): for people do not want more than their share once this has come into being, and equality is born (πλεονεξία τε γὰρ οὐκ ἔστι τούτου γενομένου καὶ ἰσότης ἔστιν).

But music acquired a central role in the *Republic* well before this ‘theoretical’ use of the notion of *harmonia*—a use which, as we shall see, is not merely decorative but is firmly grounded in contemporary musical practice. This practical grounding had already shaped extensive passages of Books 2 and 3 which explore the role that music will play in the cultural life of the future constitution and offer invaluable insights into the ethical and aesthetic implications of different tunings, instruments and rhythms. These intriguing questions go well beyond the scope of the present article and, for our present purposes, it will suffice to notice three key outcomes of Socrates and Glaucon’s discussion. First, they agree that both music and gymnastics must be pursued primarily for the sake of the soul, since they affect its two leading elements—the ‘flare-like’/‘spirited’ (*thymoeidēs*) and the ‘rational’ (*logistikon*)—by ‘tending and relaxing them until they are perfectly harmonised to each other’ just like lyre strings (ὅπως ἂν ἀλλήλοισιν συναρμοσθήτον ἐπιτεινομένῳ καὶ ἀνιεμένῳ μέχρι τοῦ προσήκοντος, *Resp.* 3.412a).¹¹ Secondly, this all-important psychological harmony can be gained only through practical performances of pieces that employ specific modes (*harmoniai*) and rhythms; hence, they select the Dorian and Phrygian modes, in keeping with the models of ethical excellence to be embodied by the future Guardians.¹² Third, they select traditional stringed instruments such as lyres and *kitharai* for their early musical training, whereas *auloi* are not regarded as appropriate for this purpose (3.399a5-e2).¹³

Such early musical experiences are far from trifling matters, as Socrates clarifies in his subsequent remarks. Early musical nurture (*trophē*) is literally ‘the most important’ and ‘supreme’ (*kyriōtatē*) type of education to be received by the Guardians, because rhythms and *harmoniai* have a unique ability: they can penetrate into the innermost recesses of the soul, and shape it most powerfully

11 Cf. *Resp.* 3.410b-c, cf. 3.411a-b, 4.441e7-442a2; *Tim.* 74b-c. On the origin and technical meaning of the verbs ἐπιτείνω/ἐντείνω and ἀνίημι in musical contexts, see Rocconi 2003, 13-21.

12 Cf. *Resp.* 3.398c-400c, with Lynch 2016. On the extraordinary nature of the future Guardians, ‘gentle’ as well as ‘flaring/fiery’, see *Resp.* 2.375c and *Tim.* 17d-18a. Before focusing on music alone, Socrates turned to the ‘traditional’ recipe that prescribed music and poetry to nurture the soul, and gymnastics for the care of the body (*Resp.* 2.376e1-3; cf. *Tim.* 18a); this educational regimen is interestingly identified as Pythagorean in a much-discussed fragment by Aristoxenus (fr. 26 Wehrli). Aristoxenus had first-hand knowledge of Pythagorean philosophy, as he was a pupil of the Pythagorean Xenophilus before joining Aristotle’s circle. Cf. Provenza 2016, 122-4, Zhmud 2012, 63-6, and Horky 2013, 41-9, 121-4.

13 The educational aims of Socrates’ musical selection are crucial, and losing sight of this context would significantly distort the meaning of this passage. Aristotle too rejects *aulos* playing from educational activities and extends this ban to professional *kitharai*; and his selection of musical modes to be employed for educational purposes is as strict as Plato’s (*Pol.* 8.1341a17-b8, 8.1342a30-b35).

by means of their emotional impact (*Resp.* 3.401d4-e1). For these reasons, musical matters must be handled with the greatest care: for a correct use of musical emotions can make the soul well-shaped and balanced (*euschēmona*), whereas regularly exposing children to random kinds of music would wreak havoc on the delicate organisation of their impressionable souls.

Hence being capable of tuning the strings of an instrument,¹⁴ or even identifying some basic features of different *harmoniai* and rhythms as Glaucon does in Book 3, represents only a preliminary step on the way to become a real expert in music.¹⁵ A truly accomplished *mousikos* must also be able to recognise the relationship that each of these technical musical means has with the fundamental forms (*eidē*) of the ethical values at the heart of the ideal society (temperance, courage, liberality and so on), as well as their mimetic representations in music and poetry.¹⁶ Only this complex knowledge—which combines technical, aesthetic as well as ethical elements—will allow the future Guardians of the city to employ musical means *correctly* to combine different psychological elements with each other, producing a truly harmonious *kosmos* in the soul.

3 *Republic 4: the ‘Symphony of Temperance’ and the ‘Harmony of Justice’*

Musical notions play a different, but related, role in *Republic 4*. In the light of the definition of musical expertise as knowledge of its different forms offered in Book 3, it is significant that musical images and concepts appear again precisely when Socrates and his interlocutors begin to define from a theoretical perspective the different forms (*eidē*) of the four basic kinds of ethical excellence, looking at the specific roles played by each of them in the dynamic workings of the ideal city they had previously founded ‘in speech’ (5.472e). And yet only two of them—temperance and justice—are defined in musical terms, a characterisation which mirrors a deeper feature that tells them apart from the other two: unlike wisdom and courage, temperance and justice will not be the exclusive preserve of a group of exceptional citizens but will be present to some degree in all the members of the ideal constitution, binding them together into a truly unified community.

¹⁴ Cf. *Phdr.* 268d-e.

¹⁵ Cf. *Phlb.* 17c-e, 56a.

¹⁶ *Resp.* 3.402b9-c8.

The inclusive nature of temperance, and its beneficial effects on the social and psychological order of the ideal city, are beautifully portrayed as the music performed by a harmonious choir in which all the citizens sing the same melody in octaves—a ‘natural symphony’ (*kata physin symphōnian*) that literally ‘stretches through all’ (*tetatai dia pasōn*) and joins the citizens together in an integrated, if diverse, whole.

As I showed in detail elsewhere,¹⁷ Plato fully exploited the technical and performative implications of the musical concept of *symphōnia* in crafting this compelling image, which is far from an abstract or wholly metaphorical depiction. Temperance should be conceived as a ‘kind of symphony or harmony’ because it creates an orderly *kosmos* (4.430e6) out of different, and potentially contrasting elements: the individual pleasures and desires that stem from the three faculties of the soul. But the psychological and social *symphōnia* produced by temperance does not achieve this goal by neutralising such naturally conflicting forces: it rather combines them in a broader harmonious system in which each element can flourish, playing its proper role and thereby contributing to the good of the community as a whole.

Plato’s choice to represent this harmonious flexibility by means of the interval of the octave reflected contemporary musical practice in many meaningful ways. To begin with, the octave was the only interval employed in sustained choral polyphony because of the unique relationship of similarity, but not perfect identity, enjoyed by its two constituents. These notes were therefore identified as *antiphōna*, literally ‘counter-voices’—a term coined to capture their distinctive aesthetic character: a perfect blend of opposites that combines the natural features of two distinct notes and makes them ‘simultaneously the same and different’ ([Arist.] *Pr.* 19.17), just like the citizens who give life to Plato’s choir of temperance.

But Plato’s use of harmonic imagery becomes even more pervasive in the case of the other ‘diffused’ virtue of the ideal city: justice. Indeed, his sustained use of musical notions in the only extended definition of the central ethical principle of the ideal constitution reveals, in my view, the full extent to which music represented a shared repertoire of cultural concepts that Plato could play with in order to give shape to his own philosophical theories, and make them more immediately understandable for his audience.

Building upon his earlier definition of justice as ‘doing one’s own job’ (τὰ αὐτοῦ πράττειν, 4.433a8), Socrates now provides a fuller account of this ethical ideal and depicts it as a special kind of action that produces the most perfect form of *harmonia*:

¹⁷ Lynch 2017.

Τὸ δέ γε ἀληθές, τοιοῦτον μὲν τι ἦν, ὡς ἔοικεν, ἡ δικαιοσύνη, ἀλλ' οὐ περὶ τὴν ἕξω πράξιν τῶν αὐτοῦ, ἀλλὰ περὶ τὴν ἐντός, ὡς ἀληθῶς περὶ ἑαυτὸν καὶ τὰ ἑαυτοῦ, μὴ ἑάσαντα τὰλλότρια πράττειν ἕκαστον ἐν αὐτῷ μηδὲ πολυπραγμονεῖν πρὸς ἄλληλα τὰ ἐν τῇ ψυχῇ γένη, ἀλλὰ τῷ ὄντι τὰ οἰκεία εὖ θέμενον καὶ ἄρξαντα αὐτὸν αὐτοῦ καὶ κοσμήσαντα καὶ φίλον γενόμενον ἑαυτῷ καὶ συναρμόσαντα τρία ὄντα, ὥσπερ ὄρους τρεῖς ἀρμονίας ἀτεχνῶς, νεάτης τε καὶ ὑπάτης καὶ μέσης, καὶ εἰ ἄλλα ἄττα μεταξὺ τυγχάνει ὄντα, πάντα ταῦτα συνδήσαντα καὶ παντάπασιν ἓνα γενόμενον ἐκ πολλῶν, σῶφρονα καὶ ἡρμοσμένον, οὕτω δὴ πράττειν ἤδη, ἑάν τι πράττῃ ἢ περὶ χρημάτων κτήσιν ἢ περὶ σώματος θεραπείαν ἢ καὶ πολιτικόν τι ἢ περὶ τὰ ἴδια συμβόλαια, ἐν πᾶσι τούτοις ἡγούμενον καὶ ὀνομάζοντα δικαίαν μὲν καὶ καλὴν πράξιν, ἢ ἂν ταύτην τὴν ἕξιν σφῶζι τε καὶ συναπεργάζεται, σοφίαν δὲ τὴν ἐπιστατοῦσαν ταύτῃ τῇ πράξει ἐπιστήμην, ἄδικον δὲ πράξιν, ἢ ἂν αἰεὶ ταύτην λύῃ, ἀμαθίαν δὲ τὴν ταύτῃ αὖ ἐπιστατοῦσαν δόξαν.

Resp. 4.443c9-444a2

In truth, justice seems to be something of this kind, except that it does not involve doing one's own things with regard to external action but concerns inner praxis, which truly bears on the self and are indeed 'one's own things'. For a just person does not allow any individual faculty in himself to perform some other part's task, nor the tribes (*genē*)¹⁸ in the soul to undertake many activities and meddle with each other. By contrast, he sets up well what truly belongs to him and is in charge of himself; he gives himself an orderly arrangement (*kosmēsanta*), becomes his own friend and harmonises the three parts with each other just like the three boundaries of *harmonia*—the lowest, the highest and the one in the middle—as well as any other elements that may happen to be in-between (*metaxy*) them. Having bound them all together and having become entirely one instead of many, temperate and harmonised, it is in this state that he acts, whether he is involved in earning money or takes care of the body, undertakes any political task or deals with private contracts. In all these circumstances, he considers and calls just as well as beautiful the action that would preserve this state of the soul and contributes to refining it further, and knowledge the science that presides over that action. Conversely, he considers and calls unjust the action that would invariably undo this state, and ignorance the belief that led to that action.

¹⁸ On the three 'tribes' populating the city and the soul, see *Resp.* 4.435b5 and 4.441a-c; cf. *Tim.* 54b-c, where the term identifies the four basic elements (*stoicheia*) of nature.

Right before introducing this strongly harmonic depiction of justice, Socrates explicitly recalled his earlier characterisation of temperance as a kind of symphony¹⁹—a subtle rhetorical move which foreshadowed the idea that these ethical values should be conceived as two faces of the same coin.²⁰

This hint is fully developed in this passage, which shows how the notion of justice is fundamentally based on the ‘simple’²¹ and ‘symphonic’ social agreement produced by temperance, and builds upon it to produce a more complex kind of *harmonia*. The emphasis put on the orderly organisation that a just person gives to his own soul (*kosmēsanta*) clearly evokes the inner *kosmos* that Socrates had previously identified with the harmonising effect of temperance,²² and the same applies to the importance attributed to the idea of establishing friendship and concordance between different parts of the city and the soul.²³

The overall outcomes engendered by justice and temperance are described in very similar terms too: both create a strong cohesive system out of radically different components, binding them together and making them part of one and the same whole by assigning a specific place and function to each individual element.²⁴

But Plato’s depiction of temperance and justice differs in a crucial respect. If temperance was primarily characterised as the pacified outcome of an orderly organisation (*kosmos*) of social, psychological and political relationships,²⁵

19 *Resp.* 4.442c9-d2: ‘won’t we call him temperate because of the friendship and symphony (τῇ φιλίᾳ καὶ συμφωνίᾳ) that exists between these same parts whenever the ruling element and the two subjects are of like mind (ὁμοδοξῶσι) that reason should rule, and don’t engage in civil war against it?’. Cf. *Resp.* 4.441e7-442a2, Lynch 2017.

20 On the closeness of justice and temperance, see also *Resp.* 1.351d, 4.430c8-d9 and 4.443e1-2.

21 On *sōphrosynē* as the result of musical ‘simplicity’, cf. *Resp.* 4.404e (ἡ δὲ ἀπλότης κατὰ μὲν μουσικὴν ἐν ψυχαῖς σωφροσύνην, κατὰ δὲ γυμναστικὴν ἐν σώμασιν ὑγίειαν) and 4.410a. On the ‘simplicity’ of the octave, see e.g. Porph. *In Ptol. Harm.* 96.16-20, 106.26-107.2.

22 Cf. also Plat. *Gorg.* 114e (κοσμήσας τὴν ψυχὴν οὐκ ἄλλοτρίῳ ἀλλὰ τῷ αὐτῆς κόσμῳ, σωφροσύνη τε καὶ δικαιοσύνη καὶ ἀνδρεία καὶ ἐλευθερία καὶ ἀληθεία κτλ.), *Phdr.* 277c and *Gorg.* 82 B 11.1.1-3 Diels & Kranz (κόσμος πόλει μὲν εὐανδρία, σώματι δὲ κάλλος, ψυχῇ δὲ σοφία, πράγματι δὲ ἀρετή, λόγῳ δὲ ἀλήθεια τὰ δὲ ἐναντία τούτων ἄκοσμία).

23 Cf. *Resp.* 4.430e4-5 (κόσμος πού τις ... ἡ σωφροσύνη ἐστίν), 4.432a7 (ταύτην τὴν ὁμόνοιαν σωφροσύνην εἶναι), 4.442c9 (σώφρονα οὐ τῇ φιλίᾳ καὶ συμφωνίᾳ τῇ αὐτῶν τούτων); *Gorg.* 507e6-508a8. On the analogy between the city and the soul in the *Republic*, see Ferrari 2003.

24 *Resp.* 4.443e1-2 (πάντα ταῦτα συνδήσαντα καὶ παντάπασιν ἓνα γενόμενον ἐκ πολλῶν, σώφρονα καὶ ἡρμοσμένον) and 4.432a2-b1. Cf. *Leg.* 2.654a4 (ᾧδαίς τε καὶ ὀρχήσεσιν ἀλλήλοισι συνείροντας).

25 While some degree of temperance is required of all the citizens of the ideal city (at a minimum as an adhesion to, and acceptance of, its clear division of social and political tasks), this ‘hyperbolic’ definition of justice, and especially the *sophia* that informs it, does

Socrates' definition of justice focuses mainly on performative aspects and presents it as a specific kind of two-fold action (*praxis*). Firstly, justice consists in setting up a harmonious and well-tempered arrangement (*hexis*) between the different parts of the soul; secondly, it consists in acting in accordance with this inner arrangement, striving to preserve and reinforce it in all sorts of practical circumstances.²⁶ The first kind of action reflects the superlative, 'architectonic' justice of the ideal philosophers, who are capable of establishing a wholly correct organisation of the constituents of their own souls, as well as those of the city, on the basis of true wisdom and reason (*logos*). By contrast, the second kind of justice, which we may call 'performative', entails acting in accordance with this ideal model in everyday life and social interactions—a kind of justice that, in its individual components, might belong also to less exceptional characters.

This conceptual interplay is reflected by Plato's sophisticated use of a musical image which is certainly appealing in itself but, once again, is far from being merely decorative. On the contrary, as we shall see, Plato's musical depiction of justice plays upon some central aspects of the technical concept of *harmonia*, as well as its long-standing and prestigious cultural background,²⁷ to clarify his innovative understanding of the dynamic interaction between the three parts of the soul.

Deciphering Plato's use of these musical notions and their practical counterparts will allow us to achieve several goals. Firstly, making sense of the performative, aesthetic and technical implications of Plato's musical image will help us understand why he chose this particular trope to express his unique understanding of the notion of justice: a composite and flexible system that embraces the actions of naturally different elements within the framework of an elegant and stable organisation that is at once hierarchical and consensual, and mirrors the harmonious *kosmos* of the ideal society as well as the universe at large.

Secondly, this perspective will shed light on aspects of Plato's wording that are otherwise very difficult to make sense of. As we have seen above, Socrates

not necessarily belong to each and every citizen. See the detailed discussion offered in Prauscello 2014, esp. 28–34, with further bibliography.

26 A similar emphasis on the double nature of justice appears at *Resp.* 4.433e10–434a1: 'from this point of view too, then, justice should be regarded as a disposition (ἐξίς) of what belongs to a person and is indeed his own, as well as the suitable action (πράξις)'.

27 In addition to the philosophical sources discussed below, see e.g. *Sol.* fr. 36.15–20 W², where the notions of harmony and justice are powerful political symbols of a system that brings together citizens of different ethical and social standing, and unite them under the rule of one and the same law.

mentions the presence of the three ‘boundaries’ in the *harmonia* of the soul but such an arrangement would produce a division into two parts, not three—a fact that seems very odd given that significant stretches of *Republic* 4 focus precisely on defining the tripartite nature of the soul. This problem could be partly solved if the three ‘boundaries’ of this *harmonia* were to be taken as figurative representations of the different parts of the soul; but how could we explain then Socrates’ subsequent remark about other elements that may ‘happen to be in-between (*metaxy*) them’?

4 The Harmony of Justice and the ‘Three Boundaries’ of a Lyre *Harmonia*

To make sense of this conundrum, we must start from the words that Plato employs to describe the three ‘boundaries’ of this particular tuning system, *nētē*, *hypatē* and *mesē*. These terms that originated in the realm of lyre practice and denoted the highest, the lowest and the intermediate string of this instrument. Rather counterintuitively for us, these labels did not indicate the pitch height of the notes produced by each string but reflected their physical disposition. So, just as happens in modern guitars, the string that was physically ‘highest’, and was therefore called *hypatē*, was actually the lowest in pitch (*c*). Conversely, the string that was physically ‘lowest’ (*nētē*) was tuned to the highest note (*c'*), while the ‘intermediate’ string (*mesē*) occupied a central position both spatially and in terms of pitch (*f*). This set of three notes constituted a stable framework of reference which, on the one hand, delimited the octave range traditionally employed by lyre tunings and, on the other, sketched the basic features of its internal organisation by means of the intermediate *mesē*, which divides the octave neatly into a fourth and a fifth (Fig. 1).

But Plato was not the first Greek theorist to describe this tuning system. It is first attested in a fragment by the fifth-century Pythagorean philosopher Philolaus who, just like Plato,²⁸ significantly labels it as *harmonia* without further qualifications, implying that it reflected a broadly recognised ‘basic tuning’ or ‘the *harmonia*’ par excellence:

28 4.443d6: ὥσπερ ὄρους τρεῖς ἀρμονίας ἀτεχνῶς, νεάτης τε καὶ ὑπάτης καὶ μέσης. Cf. e.g. [Arist.] *Pr.* 19.44, where the unqualified word *harmonia* is employed again to indicate the octave arrangement characteristic of traditional lyre tunings, delimited by the three boundaries *neatē*, *hypatē* and *mesē*. Interestingly, both Plato and the author of the Aristotelian *Problem* use the uncontracted form *neatē*, and not the standard Attic *nētē*, perhaps under the influence of Philolaus’ Doric form *neata*. On Philolaus’ book and Plato, cf. Huffman 1993, 5, 12–16.

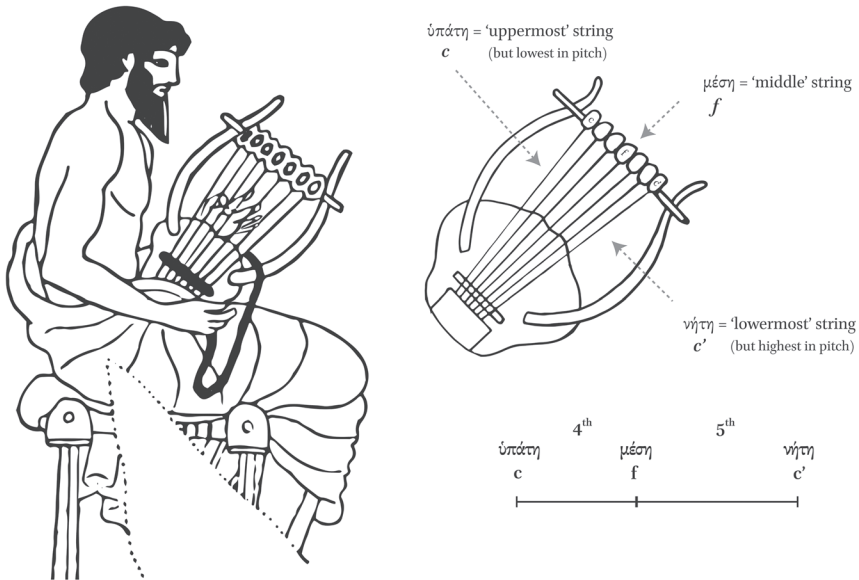
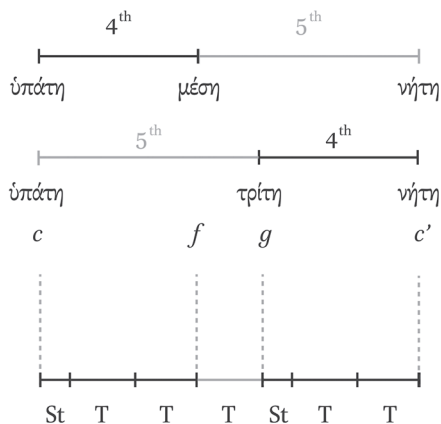


FIGURE 1 The three 'boundaries' of a lyre *harmonia*

ἀρμονίας δὲ μέγεθος ἐστὶ συλλαβὰ καὶ δι' ὀξειαν· τὸ δὲ δι' ὀξειαν μείζον τῆς συλλαβᾶς ἐπογδόω. ἔστι γὰρ ἀπὸ ὑπάτας ἐπὶ μέσσαν συλλαβὰ, ἀπὸ δὲ μέσσης ἐπὶ νεάταν δι' ὀξειαν, ἀπὸ δὲ νεάτας ἐς τρίταν συλλαβὰ, ἀπὸ δὲ τρίτας ἐς ὑπάταν δι' ὀξειαν· τὸ δ' ἐν μέσῳ μέσσης καὶ τρίτας ἐπὶ ὀγδοον· ἃ δὲ συλλαβὰ ἐπίτριτον, τὸ δὲ δι' ὀξειαν ἡμιόλιον, τὸ διὰ πασάν δὲ διπλόν. οὕτως ἀρμονία πέντε ἐπογδῶν καὶ δυοῖν διέσεις. Δι' ὀξειαν τρί' ἐπὶ ὀγδοα καὶ διέσεις, συλλαβὰ δὲ δὺ' ἐπὶ ὀγδοα καὶ διέσεις.

Philol. fr. 6a HUFFMAN

The magnitude of *harmonia* is a fourth plus a fifth. The fifth is greater than the fourth by an epogdoic interval ($9:8 = \text{a tone}$). For from the highest string (*hypata*) to the middle (*messa*) there is a fourth, from the middle to the lowest string (*neata*) a fifth, from the lowest string to the third (*trita*) a fourth, and from the third string to the highest a fifth. The interval between the third string and the middle string is epogdoic ($9:8$), the fourth is epitritus ($4:3$), the fifth hemiolic ($3:2$) and the octave is double ($2:1$). Hence *harmonia* consists of five epogdoics [i.e. tones] and two dieses [Pythagorean diatonic semitones = $256:243$]; a fifth is three epogdoics and a diesis, while a fourth is two epogdoics and a diesis.



5 tones + 2 semitones
Exempli gratia Dorian tuning

FIGURE 2 Philolaus' lyre *harmonia*

Beneath its elaborate technical veneer, this passage offers evidence that is extremely valuable for our purposes. First, Philolaus defines the structure of his octave *harmonia* as system of interlocking fourths and fifths—that is to say, a tuning system whose essence consists in a combination of unequal, consonant intervals within a perfectly harmonious and balanced whole.²⁹ Secondly, many aspects of Philolaus' wording indicate beyond doubt that he is talking about a lyre tuning. For instance, he uses the rare terms *syllaba* (literally 'grasped together') and *di' oxēian* ('through the high-pitched [strings]') to indicate respectively the interval of a fourth and a fifth—terms coined by practicing musicians that will eventually be replaced by more abstract expressions coined by harmonic theorists (*dia tessarōn* and *dia pente*, respectively 'through four' or 'through five'). Finally, the expression *dia pasan* is employed to indicate the octave, reflecting its original meaning 'through all the lyre strings'.

Recently discovered cuneiform tablets show that this basic tuning structure had its roots already in Mesopotamian lyre practice,³⁰ a remarkable continuity

29 On the different status of the consonances of the fourth and fifth on the one hand, and the perfect concord of the octave on the other, see e.g. Porph. *In Ptol.* 107.15-108.34; Theo Sm. *Math. Plat.* 48.17-49.5.

30 Cf. Franklin 2018.

which was destined to remain unaltered until late antiquity.³¹ Yet the appeal that this tuning model exerted on Plato did not derive simply from its long tradition, but especially from its prestigious cultural pedigree. As shown in another passage by Philolaus, this musical structure played a crucial role in Pythagorean cosmic and metaphysical speculation, and represented nothing less than the basic model of the orderly organisation of the universe (*kosmos*) as a whole.³²

περὶ δὲ φύσιος καὶ ἀρμονίας ὧδε ἔχει· ἅ μὲν ἐστὼ τῶν πραγμάτων αἰδῖος ἔσσα καὶ αὐτὰ μὲν ἅ φύσις θείαν γὰ καὶ οὐκ ἀνθρωπίνην ἐνδέχεται γνῶσιν πλάν γὰ ἢ ὅτι οὐχ οἷόν τ' ἦν οὐθὲν τῶν ἐόντων καὶ γιγνωσκομένων ὑφ' ἁμῶν γὰ γεγενῆσθαι μὴ ὑπαρχούσας τὰς ἐστούς³³ τῶν πραγμάτων, ἐξ ὧν συνέστα ὁ κόσμος, καὶ τῶν περαινόντων καὶ τῶν ἀπειρων. ἐπεὶ δὲ ταὶ ἀρχαὶ ὑπάρχον οὐχ ὁμοῖαι οὐδ' ὁμόφυλοι ἔссαι, ἤδη ἀδύνατον ἦς κα αὐταῖς κοσμηθῆναι, εἰ μὴ ἀρμονία ἐπεγένετο ὥτινιῶν ἂν τρόπῳ³⁴ ἐγένετο. τὰ μὲν ὧν ὁμοῖα καὶ ὁμόφυλα ἀρμονίας οὐδὲν ἐπεδέοντο, τὰ δὲ ἀνόμοια μὴδὲ ὁμόφυλα μὴδὲ ἰσοταχῇ, ἀνάγκη τὰ τοιαῦτα ἀρμονίᾳ συγκεκλεισθαι, εἰ μέλλοντι ἐν κόσμῳ κατέχεσθαι.

Philol. fr. 6 HUFFMAN

Concerning nature and harmony, it is as follows. Being eternal, the essence of things, and nature itself, encompass divine and not human knowledge, with this exception: it would not have been possible for any of the things that exist, and are known by us, to have come into being if the stable essence (*tas estous*) of the things out of which the world-order (*kosmos*) is composed (*synesta*)—both the ‘limiters’ and the ‘unlimiters’—had not already been in the beginning. But given that these origins (*archai*) existed as a foundation since the beginning (*hyparchon*), and were neither alike nor akin, it would have been impossible for them to be set into an order if harmony had not come upon them, in whatever manner it came to be. Things that are alike and akin had no need for harmony

31 See Figure 4 below; cf. Ptol. *Harm.* 8of., with Hagel 2010, 56–60.

32 Cf. Philol. fr. 1 (ἅ φύσις δ' ἐν τῷ κόσμῳ ἀρμόχθη ἐξ ἀπειρων τε καὶ περαινόντων, καὶ ὅλος <ὁ> κόσμος καὶ τὰ ἐν αὐτῷ πάντα) and fr. 6 Huffman, with Huffman 1993, 93–164. For a detailed discussion of Philolaus' fragments and their role in the history of ancient Greek harmonics, see Barker 2007, 263–86. More generally, on Philolaus' use of the musical notion of *harmonia* to depict the structure of the *kosmos*, see Horky 2013, 144–8, 154–5, 235–59; Barker 2014, 190; Palmer 2014, 222; on the notion of *kosmos* in ancient thought, see Horky 2019.

33 τὰς ἐστούς Badham: τὰς ἐντούς FGVME.

34 ὥτινιῶν ἂν τρόπῳ Huffman: ὥτινι ὧν ἂν τρόπων FV: ὥτινι ὄν ἂν τρόπον GE: ὥτινι ὄν ἂν τρόποι M.

upon them; but things that are dissimilar, unrelated and not of the same speed—for such things it is necessary to be joined by harmony, if they are to be held together in an orderly universe (*kosmos*).

In my view, this passage powerfully condenses the key theoretical points that inform Plato's use of the concept of *harmonia*. As Heraclitus and Empedocles already emphasised, *harmonia* does not originate from a peaceful and orderly world. On the contrary, the fundamental need (*anagka*) for *harmonia* arises from the very existence of a natural and inescapable tension between elements that are radically different, but equally necessary, to give rise to the complex universe we inhabit.³⁵

35 An important antecedent of Plato's (and Philolaus'?) conceptualization of *harmonia* is Heraclitus' famous aphorisms 'the most beautiful harmony arises from diverging/conflicting elements' and 'everything arises from strife' (ἐκ τῶν διαφερόντων καλλίστην ἁρμονίαν καὶ πάντα κατ' ἔριν γίνεσθαι, Heraclitus 22 B 8 Diels & Kranz; Arist. *Eth. Nic.* 8.1155b5-6; cf. Plat. *Symp.* 187a, where Eryximachus refers to this model and ascribes it to Heraclitus). Empedocles exerted an equally important influence on Plato's interpretation of *harmonia* and its relationship to the cosmic principles of Strife (νεῖκος) and Friendship/Love (φιλότης)—see e.g. Empedocles 31 B 18, 23, 27, 71, 96, 107 Diels & Kranz, and Plato's characterisation of his theory as a 'gentler' development of Heraclitus' approach (*Soph.* 242d-e, where they are respectfully referred to as 'Ionian and Sicilian Muses'). Given the scantiness of the evidence, it is hard to tell whether the element of strife played a role in Philolaus' idea of *harmonia*, or whether he simply regarded the presence of these radical differences between the elements of nature as a neutral 'fact of life'. Philolaus is mentioned in Plato's *Phaedo* and was perhaps the originator of the theory that the 'soul is harmony', a view that is defended by his pupils Simmias and Cebes and refuted by Socrates (cf. Arist. *De an.*, *passim*, Dicaearchus frs 11-12 Wehrli and Macrobius *Somn. Scip.* 1.14.19 *Pythagoras et Philolaus harmoniam [scil. animam] esse dixerunt*, with Huffman 1993, 323-32). In the *Republic*, the soul is notably not defined as 'harmony' but as a compound entity that can be harmonised, so that different kinds of ethical excellence and their opposites can be conceived as types of harmony or disharmony. The same is true for the Soul of the Whole in the *Timaeus*, which is not identified with harmony per se but is presented as a separate entity that 'partakes in reason and harmony' (λογισμοῦ δὲ μετέχουσα καὶ ἁρμονίας ψυχή, *Tim.* 36e6-37a1). Hence the Soul of the Whole does not include only rational/cognitive elements, nor can it be reduced to *nous* alone (pace e.g. Pelosi 2010, 89-91): the shape of its basic harmonic framework is indeed perfectly rational (cf. §6 below), but this harmony comprises in itself both rational and 'irrational/emotional' movements and organises them within a complex, orderly but unitary system (cf. Appendix below). Human embodied souls are made of a less pure mixture of the principles of the Same, the Other and Being that originated the Soul of the Whole (*ta hypoloipa*, *Tim.* 41d). In human souls, this perfectly balanced *harmonia* of rational and emotional elements is at first temporarily perturbed (*Tim.* 44b), but not to the extent of undoing it entirely (*Tim.* 43c7-e4): this framework is 'distorted' only temporarily and only to a degree, for the complete 'loosening' of this foundational harmonic bond would lead to death (*Tim.* 41a6-b6). Such an equation between the harmonic model of the lyre *harmonia* and the foundational

In the absence of some sort of organising principle, it would be literally impossible (*adynaton*) for elements which are ‘neither alike nor akin’ to be integrated into one and the same whole, because the natural tensions produced by their differences would inevitably turn into destructive conflicts. But the vital organizing activity performed by *harmonia* does not work by eradicating or neutralising these irredeemable differences: it rather embraces and combines them with each other, assigning a specific place, time and function to each individual note and natural element.

This is how *harmonia* is able to create a unitary and dynamic system out of naturally divergent elements: just as Odysseus ‘harmonised’ different planks to build his raft,³⁶ a lyre *harmonia* ‘joins’ unequal intervals such as a fourths and fifths into an orderly whole that holds them together, and channels the energy produced by their natural tensions, turning them into productive rather than destructive forces. Likewise, Plato’s perfectly just individual is able to organise and combine the inner movements of the different elements of his soul, giving rise to a unified, dynamic, but not strifeless whole. In other words, the *harmonia* of justice is a balance, and not an absence, of tensions (*tonoi*), which are organised on the basis of well-selected, unequal but complementary relationships/ratios (*logoi*): the octave, which holds together the ‘highest’ and the ‘lowest’ strings of the soul, and its inner articulation into fourths and fifths, which is organised around its ‘central’ element *mesē*.

But Plato’s musical depiction of the inner harmony of justice does not simply hark back to Philolaus’ distinguished philosophical model. It also plays on key aesthetic and theoretical features that were associated with the intervals of the lyre *harmonia* in Classical times and long after, as we find out from a variety of sources ranging from the Pseudo-Aristotelian *Problems* to Porphyry’s commentary on Ptolemy’s *Harmonics* and the Aristoxenian musical handbooks.

All these authors unanimously tell us that the interval of the octave enjoyed a unique status among the Greeks, and was regarded as ‘the most beautiful’ and ‘most pleasant’ of all concords ([Arist.] *Pr.* 19.39) because of its unique aesthetic nature: an unmitigated blend of opposite but equal sounds known as *antiphōna* (‘counter-voices’). This striking term reflected the well-known fact that two strings tuned an octave apart naturally echo each other ([Arist.] *Pr.* 19.24)—a physical response that was literally labelled as a kind of

structure of life is presented also in the Hippocratic treatise *On Regimen*: cf. Barker 2007, 280–2 and Pelosi 2016.

36 Hom. *Od.* 5.246–8, 5.160–5 and 361.

‘sympathy’ by some Pythagorean theorists,³⁷ using the same term we still employ nowadays.

Plato already played on this natural ‘sympathy’ and quasi-identity between the notes of the octave in giving shape to his innovative understanding of temperance; and temperance in turn represents the starting point for the more complex *harmonia* of justice both on a philosophical and a strictly musical level. Philosophically speaking, it would not be possible to establish a correct organisation of the soul, or indeed the city, centred around the leading force of *logos* if its constituents did not agree that *logos* should exert political and psychological primacy—that is to say, the essential agreement or like-mindedness (*homonoia*) defined by temperance (*Resp.* 4.432a). Likewise, the musical model of *harmonia* that Plato employs to define justice—νεάτης τε καὶ ὑπάτης καὶ μέσης—begins by defining the basic symphony of the octave, which he had previously associated with temperance, and then turns it into a more complex system by adding an extra note: the intermediate *mesē*, the note that reveals how the octave naturally contains in itself two unequal but concordant intervals, a fourth and a fifth.³⁸

Plato’s choice to assign such a key role to the note *mesē* is far from coincidental and, once again, reflects the essential role it played in contemporary musical theory and practice. As one of the Aristotelian *Problems* tells us, ‘all effective melodies make frequent use of *mesē*, and all good composers have constant recourse to it; and when they get away from *mesē*, they come back quickly to it, whereas they do not act in the same way with any of the other notes’ ([Arist.] *Pr.* 19.20). This uncontested aesthetic primacy mirrored the crucial structural function played by this note, which binds the others together in order to produce meaningful musical expressions and idioms: ‘just as a Greek sentence would not exist if some of the conjunctions, such as *te* and *kai*, were taken away [...], likewise *mesē* is, as it were, a conjunction (*syndesmos*) of notes; and especially of beautiful notes, because the sound very often originates in it (*enyparchein*)’. Conversely, when *mesē* is out of pitch, the whole tuning sounds off and painful ([Arist.] *Pr.* 19.20).

37 Cf. Porph. *In Ptol. Harm.* 95.25–96.7, with Barker 2015 *ad loc.*; Theo Sm. *Math. Plat.* 50.22–51.4, with Petrucci 2012, 355.

38 According to Nicomachus, this notion is encapsulated in the very term *harmonia*, which reflects the fact that the octave is ‘the very first concord to be fitted together (*hērmōsthē*) from concords’ (*Ench.* 252.10–13; cf. Ptol. *Harm.* 50.12–51.3, Porph. *In Ptol.* 163d–64d). See also Plat. *Phlb.* 17d and Theophrastus fr. 717 Fort., with Barker 2015, 294–5: ‘the Pythagoreans called *syllabē* the concord of the fourth, *di’oxeia* the fifth and assigned the octave *harmonia* to the system [of these two intervals], as Theophrastus says too’.

For these reasons, *mesē* was characterised as the ‘origin’ (*archē*, [Arist.] *Pr.* 19.44) or the ‘leader’ (*hēgemōn*) of the system of *harmonia*.³⁹ The very notion of ‘being in harmony’ was indeed defined as standing in a certain relation to *mesē* ([Arist.] *Pr.* 19.36), the common element that coordinates the whole and determines the specific functions (*dynamēis*) played by its individual notes.⁴⁰

And this is precisely the role that Plato attributes to the defining element of his notion of justice: reason (*logos*), the faculty that is capable of producing a truly unified system in the city and the soul by attributing a well-defined function to each individual part on the basis of its own natural talents and features. Just as *mesē* brings together a set of notes and turns them into an orderly and integrated scale by establishing and maintaining correct relationships (*logoi*)⁴¹ between their individual pitches and functions in the octave, reason is capable of binding different elements of the soul together into a cohesive psychological and political whole,⁴² building upon the shared agreement produced by temperance.

And just as the choristers of temperance were able to perform their simple, but beautiful, octave concord because they agreed to follow the lead of their ‘chorus-leader’, the inner *harmonia* of a just soul works only if *mesē* is given the leading role in the tuning. As Aristotle tells us, *mesē* played the same role in the tuning of *harmonia* as the chorus leader in a chorus: both stood in the middle of their respective groups and represented their ‘origin’, common point of reference and leading principle (ἐνθα μὲν γὰρ ὁ κορυφαῖος ἐνθα δὲ ἡ μέση ἀρχή, *Metaph.* 5.1018b28-29).

5 ‘Any Other Element That May Happen to Be In-Between (*Metaxy*) ...’

So far, our reconstruction of the harmonic model that Plato employed to give shape to the notion of justice has accounted for the relationship established between the three ‘boundaries’ of the lyre *harmonia* and their counterparts in the just soul. But another aspect of Plato’s wording remains to be elucidated,

39 *hēgemōn*, e.g. [Arist.] *Pr.* 19.33, 19.36 ; Aristox. *apud* [Plut.] *De mus.* 1135a10; Dio Chrys. 68.7.

40 Cleonides *Isag.* 202.3-5 Jan; cf. Aristox. *El. harm.* 58.10-60.3 Da Rios on the role of *dynamis* in determining the identity of a note in a tuning system.

41 On the central role of harmonic ratios in the definition of the structure of the World Soul in the *Timaeus*, see *Tim.* 35b4-36b6 with §6 below, and *Tim.* 31c.

42 Cf. Plut. *Plat. Quaest.* 1009a, where *mesē* is identified with *logistikon*, *hypatē* with *epithymētikon*, and *nētē* with *thymoeidēs*. See also *De an. procr.* 1029a.

namely his mysterious reference to ‘any other elements that may happen to be in-between them’ (*metaxy*).

This is a startling remark indeed, given that long stretches of *Republic* 4 focus on defining the tripartite nature of the human soul and its political counterpart in the state. To unravel this difficulty, we must turn once again to Philolaus’ testimony on the structure of a lyre *harmonia* (fr. 6a Huffman), for this passage does not only give us the key to understanding the pitch-relations between the three boundaries mentioned by Plato but completes the picture by adding a fourth note, *g*, which stands a tone above *mesē*. Philolaus labels this note *trita* (literally the ‘third string’). This revealing detail indicates that he is describing the traditional tuning system employed on seven-stringed lyres:⁴³ as shown in Figure 3, a scale that consists of seven notes but spans an octave must necessarily ‘skip’ one step, producing a gap that makes the note standing a tone above *mesē* the ‘third’ string from the top. In later musical practice and theory, most notably after the so-called New Music,⁴⁴ this gap was to be filled by an additional string—a change that gave rise to full octachord systems and caused a shift in the name of the notes too. In fact, the ‘third’ string from the top now corresponded to a different pitch, *a^b*, and for this reason the string corresponding to the note *g* was—very imaginatively!—renamed *paramesē*, i.e. the string ‘next to *mesē*’.⁴⁵

Philolaus’ addition of the extra note *g* to the three basic boundaries mentioned by Plato produces an elegant, symmetrical and tripartite organisation which includes two tetrachords separated by a tone—a structure that was to become the fundamental system of reference for all investigations into ancient Greek harmonic theory. In fact, this basic framework corresponds to what Aristoxenus would call ‘immovable’ or ‘standing’ notes,⁴⁶ an expression that indicates that the relative intervals formed by these notes were invariable. And indeed, as shown in Figure 4, this interval system was to remain a constant, basic skeleton that informed all lyre tunings from Philolaus’ time until Ptolemy’s, i.e. practically for the whole of ancient Greek culture.

In order to produce different modes on a lyre, it was therefore necessary to fit various sequences of intervals within this stable framework, adjusting the pitch of the intermediate strings without altering this essential structure

43 Cf. Arist. *Metaph.* 14.1093a14 (ἐπὶ τὰ δὲ χορδαὶ ἡ ἁρμονία), Alex. Aphr. *In Metaph.* 1093a13 and esp. [Arist.] *Pr.* 19.7, 19.32, 19.47.

44 Lynch 2018.

45 On Nicomachus’ convoluted explanation of this development, see Barker 1989, 261f.; Huffman 1993, 152–6; Barker 2007, 275–8. I will justify in detail the choice of *a^b* rather than *b^b* for Philolaus’ ‘gapped’ tuning elsewhere in due course.

46 φθόγγοι ἀκίνητοι, Aristox. *El. harm.* e.g. 28.10–12; φθόγγοι ἐστῶτες, Cleonides *Isag.* 185.16–19.

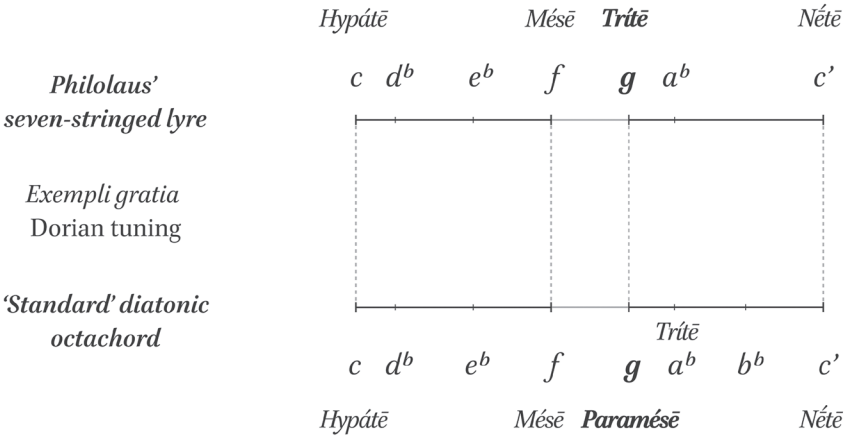


FIGURE 3 Philolaus' seven-stringed *harmonia* vs later octachord systems. *Exempli Gratia* Dorian tuning

Philolaus' *harmonia*
(Fr. 6a Huffman)

Ptolemy's *kithara* tunings
(*Harm.* 2.16)

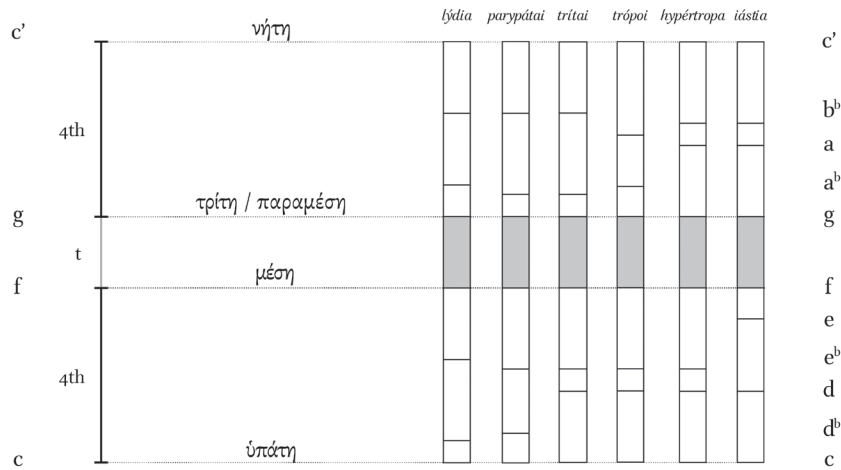


FIGURE 4 The stable *harmonia* framework of lyre tunings

comprising two tetrachords separated by a tone—a well-ordered, harmonious and balanced tripartite model, which defines the harmonic organisation of the just soul depicted in the *Republic* and informs also the shape of the Soul of the Whole in the *Timaeus*.

6 The Soul of the Whole in the *Timaeus* and the Model of the Lyre *Harmonia*

A renowned passage of the *Timaeus* describes how the Demiurge gave shape to the ‘Soul of the Whole’⁴⁷ by organising the foundational but immaterial ‘fabric’ of the Universe, which he had previously created out of the three basic ‘natures’ (*physeis*) of the Same, the Other and Essence/Existence (*Tim.* 34c-35b). The Demiurge mixes these three principles together into a perfectly unitary *idea*, which he then divides and distributes in accordance with a precise harmonic structure:⁴⁸

ἤρχετο δὲ διαιρεῖν ὧδε. μίαν ἀφείλεν τὸ πρῶτον ἀπὸ παντὸς μοῖραν, μετὰ δὲ ταύτην ἀφῆρει διπλασίαν ταύτης, τὴν δ’ αὖ τρίτην ἡμιολίαν μὲν τῆς δευτέρας, τριπλασίαν δὲ τῆς πρώτης, τετάρτην δὲ τῆς δευτέρας διπλὴν, πέμπτην δὲ τριπλὴν τῆς τρίτης, τὴν δ’ ἕκτην τῆς πρώτης ὀκταπλασίαν, ἐβδόμην δ’ ἑπτακαικικοσιπλασίαν τῆς πρώτης· μετὰ δὲ ταῦτα συνεπληροῦτο τὰ τε διπλάσια καὶ τριπλάσια διαστήματα, μοίρας ἔτι ἐκείθεν ἀποτέμνων καὶ τιθεὶς εἰς τὸ μεταξύ τούτων, ὥστε ἐν ἐκάστῳ διαστήματι δύο εἶναι μεσότηας, τὴν μὲν ταυτῷ μέρει τῶν ἄκρων αὐτῶν ὑπερέχουσας καὶ ὑπερεχομένην, τὴν δὲ ἴσῳ μὲν κατ’ ἀριθμὸν ὑπερέχουσας, ἴσῳ δὲ ὑπερεχομένην. ἡμιολίων δὲ διαστάσεων καὶ ἐπιτρίτων καὶ ἐπογδόων γενομένων ἐκ τούτων τῶν δεσμῶν ἐν ταῖς πρόσθεν διαστάσεσιν, τῷ τοῦ ἐπογδόου διαστήματι τὰ ἐπίτριτα πάντα συνεπληροῦτο, λείπων αὐτῶν ἐκάστου μόριον, τῆς τοῦ μορίου ταύτης διαστάσεως λειφθείσης ἀριθμοῦ πρὸς ἀριθμὸν ἐχούσης τοὺς ὅρους ἕξ καὶ πενήκοντα καὶ διακοσίων πρὸς τρία καὶ τετταράκοντα καὶ διακόσια. καὶ δὴ καὶ τὸ μειχθέν, ἕξ οὐ ταῦτα κατέτεμνεν, οὕτως ἥδη πᾶν κατανηλώκει.

Tim. 35b4-36b6

47 On its composite nature, see Appendix below: just as its human counterpart, the life-giving principle of the whole *kosmos* and its body (*sōma*) is not to be reduced to intellect/*nous* alone. This point is clearly outlined from the very first appearance of the Soul at *Tim.* 29e-30b; contrast with Atticus, *Against those who interpret Plato through Aristotle* fr. 7, ap. Euseb. *Praep. evang.* 15.9.1-14, in Boys-Stones 2017, 284f.

48 It is not immediately clear from Plato’s wording whether the sequence should be interpreted as an ascending or descending scale. However, as pointed out in Barker 2007, 322, smaller numbers should be identified with lower pitches, in keeping with Archytas’ acoustic theory—see n. 57 below.

He started to divide as follows. He first took away one portion from the whole, and after that another portion that was twice as big as the first; then again a third that was hemiolic with regard to the second, but three times the first; and then a fourth that was double the second, a fifth that was triple the third, a sixth that was eight times the first and a seventh that was twenty-seven times bigger than the first.

1	2	3	4		8	9	...	27
C	c	g	c'		c''	d''		a'''

After these he filled out the double and triple intervals, cutting away still other parts from the mixture, and put them in-between (*metaxy*) the previous shares so that there were two means in each interval:⁴⁹ one of them exceeds and is exceeded by the same part of the two extremes (= harmonic mean), whereas the other exceeds and is exceeded by an equal number (= arithmetic mean).⁵⁰

	$\frac{4}{3}$	$\frac{3}{2}$		$\frac{8}{3}$		$\frac{9}{2}$	$\frac{16}{3}$	6		$\frac{27}{2}$	18	
1			2		3	4			8	9		27
C			c		g	c'			c''	d''		a'''
	F	G		f		d'	f'	g'			a''	d'''

Once these hemiolic, epitritic and epogdoic divisions took shape by inserting these bonds in the pre-existing divisions, he filled out all the epitritic distances [= fourths] with epogdoic intervals [= tones], leaving in each of them its own part—a part which is defined by the ratio 256:243 [= Pythagorean diatonic semitone]. In this way, the mixture from which he had been cutting these parts was now completely spent.

C	D	E	b	F	G	A	b	B	b	c	d	b	e	f	g	a	b	b	c'	d'	e	b	f'	g'	a'	b	b	c''	d''	e	b	f''	g''	a''	b	b	c'''	d'''	e	b	f'''	g'''	a'''	
St	T	T	T	St	T	T	T	St	T	T	St	T	T	T	St	T	T	St	T	T	St	T	T	St	T	T	St	T	T	St	T	T	St	T	T	St	T	T	St	T	T	St	T	T

49 Cf. Arist. *Metaph.* 14.1093a25-30, where these two intermediate sounds are collectively identified as 'two *mesai*', and further discussion below. Theon of Smyrnae too points out that the harmony of the Whole 'is composed with two *mesai* (δυσὶ συναρμύζεσθαι μεσότησιν)' (*Math. Plat.* 65.4). On the traditional association of these notes with the numbers 8 and 9, cf. [Plut.] *De mus.* 1138c-1139b, with n. 63 below, and Plat. *Epin.* 990e.

50 For the equivalences in parenthesis, cf. Archyt. fr. 2 Huffman on 'the three means employed in music', with nn. 52 and 62 below. These means play a significant role also in the Pseudo-Archytan treatise *On Law and Justice* (Huffman 2005, 170-8, 603-6).

The harmonic structure of the Soul of the Whole described above represents the fundamental fabric that underlies the *kosmos*; the common matrix that unites in itself all its individual parts and elements, their complex movements and individual relationships; what we might call a network of forces, such as those that regulate the movement of the planets (*Tim.* 38c-d), or the fundamental scale that offers all the notes needed to perform the great song of the life of the universe (*Resp.* 10.616e-617d).

This basic, underlying harmonic order is embedded in the *kosmos* but is not immediately visible or audible in itself, nor is it identical with any individual component.⁵¹ Yet human beings can observe and experience it by coupling perception with reason—for instance, by observing and studying the regular movements of the planets or the beautiful order of musical *harmoniai*.⁵²

From a musical point of view, the similarities between the basic harmonic skeleton of the Soul of the Whole and the structure of Philolaus’ lyre *harmonia* leap to the eye. Both start by defining the basic intervals of the octave, fourth and fifth from their relative ratios (double, 2:1; hemiolic, 3:2; and epitritic, 4:3), and then reveal their inner articulation into tones and semitones, following a diatonic division.⁵³ The *Timaeus* scale, however, spans a gamut that is much larger than Philolaus’ tuning and the *harmonia* of a just soul, and embraces

51 The overall harmonious fabric of the Soul of the Whole is envisaged as a strip, or more fittingly a string (cf. *Tim.* 34b3-4: ψυχὴν δὲ εἰς τὸ μέσον αὐτοῦ θείας διὰ παντός τε ἔτεινεν), that is subsequently divided into two parts lengthwise. These identical parts will be joined at a right angle and bent into concentric circles—the outer circle of the Same and the inner circle of the Different; and the latter will be in turn divided into several rings that regulate the movements of different planets (*Tim.* 36b-d). But these rings, and the circles themselves, are not identical to the planets, which appear later with the generation of the corporeal and time (*Tim.* 38c-d). These circles are ‘made’ out of the same ‘fabric’: the Soul’s *harmonia*, a complex network of forces that encompasses all the *dynamis* of the *kosmos*—all the elements, motions, potentialities and energies it embraces and regulates. Cf. *Resp.* 10.616c-617d. Interestingly, the process of dividing a single ‘string’ into harmonic proportions and then bending it into a circle, as the Demiurge does in the *Timaeus*, is the mirror image of the process described by Ptolemy to illustrate the harmonic organisation of the zodiac, and the closeness of astronomy and harmonics (*Harm.* 102.4-13, with Creese 2010, 351-5).

52 See *Resp.* 7.530a-531e, on the role played by the ‘sister sciences’ (*adelphai epistēmai*) of astronomy and harmonics in revealing the fundamental order of the universe. Cf. Archyt. fr. 1, where they are called *adelphai mathēmata*—a difference in terminology that cannot be understated—and include also geometry and arithmetic; see also Archyt. fr. 4 Huffman, where the science of *logoi* (*logistikē*) is presented as the one that underlies all others (Huffman 2005, 68-89). A more elaborate version of this trope is offered at Ptol. *Harm.* 94.16-20.

53 Cf. Theo Sm. *Math. Plat.* 56.3-5 (‘the diatonic genus is simple, noble and especially natural; for this reason Plato preferred it’), and 63.25-64.1.

more than four of such systems—an important point that will be addressed in detail below. But this discrepancy is readily understood if one keeps in mind the overarching goal of this passage, namely that the *Timaeus* scale does not aim at describing the harmonic structure of an individual soul, or a single tuning employed by a single performer: the creation of the Soul of the Whole is a ‘likely story’⁵⁴ that illustrates the hyperbolic harmony of the Universe as a whole, whose perfect beauty includes in itself a variety of living and immortal creatures (*Tim.* 92c), and to do so employs a combination of individual elements.⁵⁵

In keeping with this broader cosmological and physical outlook, it is noteworthy that the series of pitches defined by the first step of the Demiurge’s division—the basic series of double and triple intervals—are the same that we find in the corresponding steps of the series of harmonic overtones generated by any musical note (cf. Fig. 5): a truly natural *harmonia* which is hidden to the ear but is revealed by the inborn ‘sympathy’ of concordant strings.⁵⁶ This approach is also consistent with Archytas’ theory of sound, which underlies other key musical passages of the *Timaeus*.⁵⁷

54 An *eikos mythos*, and not a perfectly exact and comprehensive account: *Tim.* 29c-d, and §1 above.

55 As I will show below, however, this does not entail that the *Timaeus* scale is to be considered ‘musical [only] in an abstract, mathematical sense, in virtue of its perfect proportionality, completeness and integration’ (Barker 2007, 322); it incorporates various models taken from contemporary lyre practice and combines them to represent fully the pervasive, all-encompassing harmony of the *kosmos*.

56 On the octave, see above on [Arist.] *Pr.* 19.24, and cf. *Pr.* 19.7, 19.8, 19.12, 19.18, 19.23, with Lynch 2017, 26-32; more complex musical demonstrations (*epideixeis*) involving the monochord are discussed in Creese 2010, 131-77.

57 According to Archytas (fr. 1 Huffman), sounds arise from impacts (*plēgai*) that strike the air and reach our senses. If the movement of these impacts are quick, we perceive high-pitched sounds (ἃ μὲν ἀπὸ τῶν πλαγῶν ταχὺ παραγίνεται καὶ ὀξεῖα φαίνεται); if they are slow, we perceive low-pitched ones (τὰ δὲ βραδέως καὶ ἀσθενῶς, βραρεῖα δοκοῦντι ἤμεν). The plural form of Archytas’ expression leaves some aspects of his theory unclear: is each sound caused by a single impact or by several? The latter option is clearly envisaged in [Arist.] *Pr.* 19.39, where higher sounds are said to produce more impacts on the air than lower ones, making their movement (*kinēsis*) ‘faster’ than the movement of lower notes. For example, the higher note of an octave produces twice as many ‘impacts’ as the lower one in a given unit of time; that is to say, what we would call the frequency of the highest note of an octave is exactly double the lowest. In keeping with this, at *Timaeus* 67a7-c3, sound is first defined as the ‘impact transmitted by air, through the ears, to the brain and blood until it reaches the soul’, and this impact produces a movement (*kinēsis*) that starts from the head and reaches the liver. If this movement is ‘fast’ (i.e. caused by many impacts close to each other in time), then the sound is perceived as high-pitched; if it is ‘slow’ (i.e. caused by fewer impacts in the same unit of time), then the sound is perceived

The first step of the Demiurge’s harmonic construction of the Soul of the Whole
(series of double and triple intervals, *Tim.* 35b-c)

1	2	3	4		8	9	...	27
C	c	g	c’		c’’	d’’		a’’

The natural harmonic series generated by C₁ (~33 Hz)
(numbers in italics indicate deviations from equal temperament in cents)

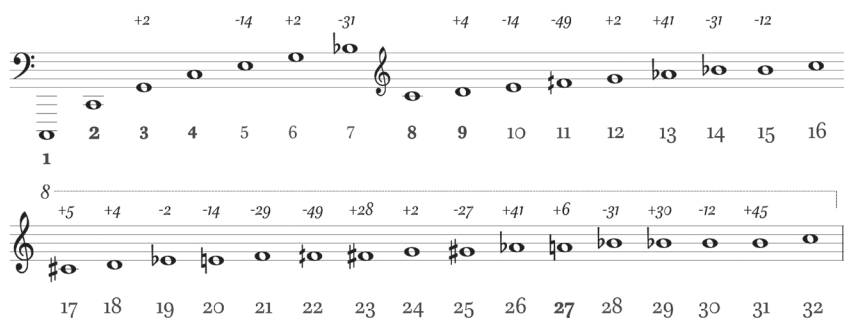


FIGURE 5 The first step of the harmonic construction of the Soul of the Whole and the natural harmonic series

The following steps undertaken by the Demiurge to ‘fill out’ the basic skeleton of double and triple intervals takes distance from the natural harmonic series, and defines a wide diatonic scale, which is discussed in a wealth of ancient *Timaeus* commentaries.⁵⁸ A remarkable example that is particularly relevant for our purposes is preserved in a section of the Pseudo-Plutarchan treatise *De Musica* (1138c8-1139b4),⁵⁹ which begins by showing that Plato in the *Republic* did not reject *harmoniai* other than the Dorian and Phrygian, and the *aulos* in favour of lyres, ‘out of ignorance or inexperience, but because they were unsuitable for such a constitution’ (1138c6-8).⁶⁰

as low-pitched. *Timaeus* adds two other features of this movement that determine other qualities of the perceived sound: if the movement is uniform, then the sound appears homogeneous and smooth, whereas it seems rough in the opposite case; finally, the sound will seem loud if the movement is mighty (*pollē*), soft if the opposite. Cf. Barker 2000.

58 These *Timaeus* commentaries, possibly originated by Crantor (ca. 335-275 BC), had a great influence on ancient culture, the Renaissance and beyond: cf. Barker 2003; Palisca 1985.

59 Cf. Barker 1984, 227-9; Barker 2007, 331f.; Rocconi 2011.

60 Cf. n. 2 above.

In order to defend Plato's musical competence from such unfair accusations, the author of the treatise turns to the 'generation of the soul' (*psychogonia*) described in the *Timaeus* to demonstrate that Plato was a 'true expert' in harmonic theory. Citing the relevant text, he points out that Plato illustrated the 'psychic *harmonia* of the four natural elements (*tōn tessarōn stoicheiōn*)⁶¹ and the cause of its consonance, which arises from unequal elements' (1138d9-e1) by applying the concepts of arithmetic and harmonic means;⁶² this process divides the octave into two tetrachords separated by a tone, notes that 'fall in-between' (*metaxy*) its wider limits.⁶³

As shown above, Plato's *Timaeus* indeed puts great emphasis on the role played by these intermediate notes (*ta metaxy*) in 'filling out' the basic series of double and triple intervals (*Tim.* 35c2-36a3), producing the same pattern that is first defined by Philolaus' lyre *harmonia* and informs the harmony of justice in the *Republic*.

The harmonic models and language that are employed so consistently in these texts allow us to shed light also on important point—the otherwise obscure reference that Socrates makes in the *Republic* to 'any other elements that may happen to be in-between' the three fundamental boundaries of the *harmonia* of the just soul, *hypatē c*, *mesē f*, *nētē c'* (*Resp.* 4.443c9-444a2, quoted in §3 above). Indeed, at least one additional 'intermediate' note—*paramesē g*—was necessary to set up the harmonic framework at the heart of traditional lyre modes; in keeping with this, both *mesē f* and *paramesē g* were collectively identified as *mesai* in Pythagorean parlance (*Arist. Metaph.* 14.1093a25-30).

But many more 'intermediate' notes are of course required to set up a full Dorian or a Phrygian lyre tuning—that is to say, the two modes selected in *Republic* 3 for the musical education of the future Guardians. As I showed in detail elsewhere, if we reconstruct these modes on the basis of the extant technical evidence, we are presented with a rather surprising correspondence: only the two *harmoniai* selected by Socrates and Glaucon—Dorian and

61 Cf. *Tim.* 31c-32d, 35b-36b, 55e-56e.

62 The intervals of the fourth and fifth are identified in this passage with two types of mathematical 'means'—a topic discussed in detail in Archyt. fr. 2 Huffman. Here we are told that the 'subcontrary' mean was also called 'harmonic', a terminological change attributed to various Pythagorean theorists including Archytas himself and Hippasus (*Iamb. In Nic.* 141f., 100.19-101.1 Pistelli), as well as Philolaus (*Nicom. Arith.* 2.26.2).

63 Cf. [Plut.] *De mus.* 1139a1-5: 'given that these are the numbers that fall in-between six and twelve, and that the interval of the octave consists of a combination of a fourth and a fifth, it is clear that *mesē* will have number eight, *paramesē* number nine' (τούτων οὖν τῶν ἀριθμῶν ὄντων μετὰξὺ τῶν ἑξ καὶ τῶν δώδεκα, καὶ τοῦ διὰ πασῶν διαστήματος ἐκ τοῦ διὰ τεττάρων καὶ τοῦ διὰ πέντε συνεστώτος, δῆλον ὅτι ἑξείη ἢ μὲν μέση τὸν τῶν ὀκτῶ ἀριθμόν, ἢ δὲ παραμέση τὸν τῶν ἐννέα).

‘ACCEPTED’ EDUCATIONAL MODES

CORRESPOND to the basic traditional
framework of Hellenic lyre *harmonía*

(C F G C')

DORIAN

c d \flat e \flat **f** **g** a \flat **c'**

PHRYGIAN

c d e \flat **f** **g** b \flat **c'**

‘REJECTED’ EDUCATIONAL MODES

DO NOT MATCH the basic traditional
framework of Hellenic lyre *harmonía*

(C F G C')

MIXOLYDIAN

c d \flat e \flat **f** f \sharp ? **c'**

SYNTONOLYDIAN

? ? e f **g** a **c'**

‘LOOSE’ LYDIAN

c d e f \sharp **g** a/b? **c'**

IASTIAN

A B \flat **c** d e **f** **g**

FIGURE 6 The modes of *Republic* 3 and the framework of *harmonía* (c f-g-c', marked in bold)

Phrygian—are compatible with the basic lyre framework, whereas all the others miss at least one of the four ‘fixed notes’ c–f–g–c’ (Fig. 6). Conversely, the four modes rejected from the educational repertoire of the future Guardians are especially suitable for the *aulos* (Fig. 7)—a correspondence that matches their characterisation in early and classical Greek poetry.⁶⁴

In other words, Socrates and Glaucon gave preference to the two modes—Dorian and Phrygian—that could be played on traditional seven-string lyres without altering their fundamental *harmonía* framework: a choice that is perfectly consistent with their selection of ‘Apollo’s instruments’ (*Resp.* 3.399e1–2) over ‘those belonging to Marsyas’.⁶⁵ And the combination of these two lyre

64 See Lynch 2016. On the essential role of this harmonic framework, and its subversion in the ‘New Music’, see Lynch 2018.

65 Cf. Plat. *Lach.* 188d, where Laches presents the ‘simple Dorian’ (ἀτεχνῶς δωριστί) as ‘the only *harmonía* that is properly Hellenic’. He contrasts it starkly to the Iastian (ἀλλ’ οὐκ ἰαστί) and then adds a more nuanced rejection of the Phrygian and Lydian (‘and I believe not even the Phrygian or Lydian’, οἷμαι δὲ οὐδὲ φρυγιστί οὐδὲ λυδιστί)—implying that these modes had a different status from that of the Iastian. Technically speaking, this was indeed the case: unlike the Iastian and its lower register, the other three modes—Dorian, Phrygian and Lydian—could be fitted within the central octave framework of the lyre *harmonía* (cf. Lynch 2018). But this implied a significant conceptual change. In the basic Dorian lyre tuning, the middle string of the lyre (later known as ‘thetic *mesē*’) coincides with Dorian *mesē* f (see Figure 9 below). By contrast, producing a Phrygian

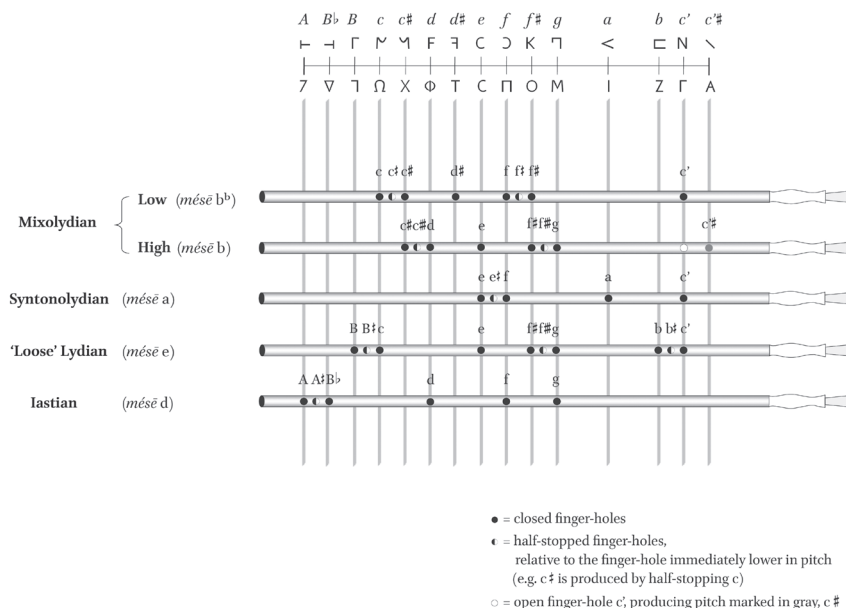
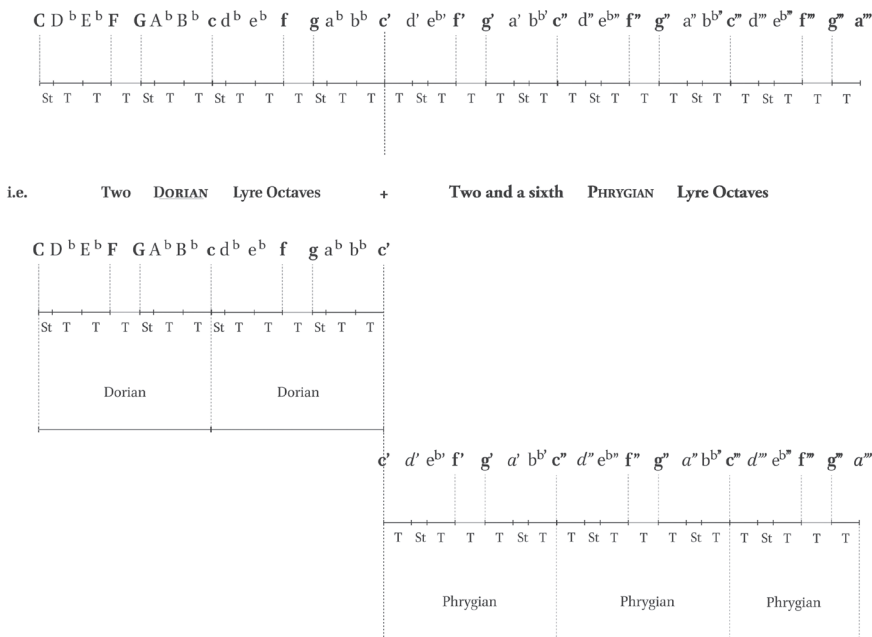


FIGURE 7 The 'rejected' *harmoniai* of *Republic* 3 as *aulos* modes, and the relevant notation signs by semitones (Aristid. *De mus.* 19-20 and 26.14-21 W.I.)

Note: This reconstruction corrects the one given in Lynch 2016, 283, fig. 3, setting each *harmonia* at its relative *mesē*; for the *aulos* version of the Dorian, Phrygian and Lydian *harmoniai*, cf. Lynch 2018, 296, fig. 1. Thanks are due to Stefan Hagel for providing the ancient musical notation fonts.

harmoniai allows us to provide a solution to another vexed question, namely how to make musical sense of the *Timaieus* scale. Far from being a wholly abstract construction, the harmony of the Soul of the Whole comprises two Dorian diatonic octaves followed by two octaves and a sixth based on the

or Lydian *harmonia* on a lyre implied separating the abstract notion of *mesē* from this physical lyre string, introducing the new notion of dynamic *mesē*: this made it possible to identify the 'tonic' of each scale (their 'dynamic' *mesē*) with different physical strings, respectively *paramesē* g for the Phrygian mode and *tritē* a for the Lydian mode (cf. Lynch 2018, 293-302). Even though this is a fairly simple process in practical terms, the conceptual process that informs this development would certainly not qualify as 'untechnical/simple' (ἀτεχνῶς): a coincidence of physical and theoretical terms that applies only to the Dorian mode. The selection of both Dorian and Phrygian tunings made in *Republic* 3 already pushes the limits of the austere Spartan model embraced by Laches, and accepting to identify *mesē* respectively with thetic *mesē* f (Dorian *mesē*) and with thetic *paramesē* g (Phrygian *mesē*). But this choice was far from revolutionary, given that both of these strings were already called *mesai* in the Pythagorean tradition (Arist. *Metaph.* 14.1093a25-30).

FIGURE 8 The *Timaeus* scale as Dorian and Phrygian lyre *harmoniai*

Phrygian diatonic *harmonia* (see Fig. 9). This interpretation not only accounts for the problematic interval of a tone that follows the first two Dorian octaves,⁶⁶ but also explains the vague wording employed at the very end of the *Timaeus* passage to describe the ‘filling’ of the intermediate intervals:

‘Once these hemiolic, epitritie and epogdoic divisions took shape by inserting these bonds in the pre-existing divisions, he filled out all the epitritie distances [= fourths] with epogdoic intervals [= tones], leaving in each of them its own part—a part which is defined by the ratio 256:243 [= Pythagorean diatonic semitone]’

Tim. 36b1-2

In the light of the present reconstruction, this apparently clumsy expression becomes perfectly understandable, and indeed appropriate to describe the variable arrangements of intervals of this scale. As shown in Figure 8 above, tones and semitones do not in fact appear in the same order throughout the scale: the first two octaves follow the Dorian diatonic division of the fourth

66 Barker 2007, 320-22.

St-T-T, while the upper half of the system presents the Phrygian subdivision T-St-T.⁶⁷

The basic ‘building blocks’ of this scale are therefore consistent with known musical tunings. Yet this scale has an exceptionally wide range—a feature that has often been taken as sign that it did not reflect musical scales or attunements used in practical performances.⁶⁸ Such claims, however, are ill supported by ancient evidence: Aristoxenus, for instance, tells us that greatest concord available in any single instrument or voice is ‘two octaves and a fifth: for we cannot stretch up to three octaves’ (*El. harm.* 26.5-7 Da Rios). This range is already significantly larger than the basic tuning envisaged by Philolaus, for instance; but this is not the whole picture, as Aristoxenus clarifies in the subsequent lines of this passage:

τάχα γὰρ ὁ τῶν παρθενίων αὐλῶν ὀξύτατος φθόγγος πρὸς τὸν τῶν ὑπερτελείων βαρύτερον μείζον ἂν ποιήσῃ τοῦ εἰρημένου τρις διὰ πασῶν διάστημα [...]. ταῦτὸ δὲ καὶ παιδὸς φωνὴ μικροῦ πρὸς ἀνδρὸς φωνὴν πάθοι ἄν. ὅθεν καὶ κατανοεῖται τὰ μεγάλα τῶν συμφῶνων· ἐκ διαφορουσῶν γὰρ ἡλικιῶν καὶ διαφερόντων μέτρων τεθεωρήκαμεν, ὅτι καὶ τὸ τρις διὰ πασῶν συμφωνεῖ καὶ τὸ τετράκις καὶ τὸ μείζον.

El. harm. 26.8-11 Da Rios

For it is evident that the interval made by the highest note of the ‘girl’ *aulos* with the lowest note of the ‘hyper-complete’ *aulos* would be greater than the three octaves mentioned [...];⁶⁹ and the same applies to the voice of a small child in relation to the voice of a man. From these instances we get to know the greatest of the concords: for it is by looking at different ages and different sizes that we have observed (*tetheōrekamen*) how the triple octaves is concordant, and so are the interval of four octaves and what is bigger than that too.

67 Both Dorian and Phrygian are mentioned in later sources as models for the harmony of the *kosmos*, albeit often in their chromatic variant: see e.g. Plut. *De anim. procr.* 1028f-1029d (diatonic); Alexander of Ephesus *ap. Theo Sm. Math. Plat.* 138-141. Full references and useful discussions are provided in Reinach 1900; Richter 1999; Hagel 2010, 35, n. 96, and 46, n. 118. On the different approach that underlies the apocryphal work known as *Timaeus Locrus*, see Hagel 2010, 162; Creese 2010, 264-82.

68 E.g. Barker 2007, 321.

69 Cf. Aristox. fr. 101 Wehrli (= Ath. 14.634e-f), reporting the classification of different *auloi* into *partheneioi* (‘girl pipes’), *paidikoi* (‘child pipes’), *kitharistērioi* (‘kithara pipes’), *teleioi* (‘complete pipes’) and *hyperteleioi* (‘extra-complete pipes’). Cf. Ath. 4.176f.

Aristoxenus’ testimony clearly indicates that ranges above four octaves were not only abstract concepts in Classical times: such wide intervals were heard and sung in musical performances, which audibly displayed their concordant nature (τεθεωρήκαμεν). But these performances did not feature a single musician or instrument. They involved a variety of instruments of different sizes and singers of different ages and sexes: a rather apt model for the all-encompassing harmony of the *kosmos* embodied in Plato’s *Timaeus* scale.

The widest possible concord (but not the widest range) that Aristoxenus labels as ‘what is greater’ than four octaves must be one of the concordant intervals smaller than five octaves, i.e. four octaves and a fourth or four octaves and a fifth. The interval of four octaves and a fifth—which corresponds to the number 24—is indeed mentioned elsewhere as the compass of the cosmic *harmonia* (e.g. Macrobius *Somn. Scip.* 2.1.24); and Aristotle too reports that Pythagorean theorists coupled the number 24 with an *aulos*-based account of the ‘whole system of the heavens’ (τῇ οὐλομελείᾳ τοῦ οὐρανοῦ, *Metaph.* 14.1093b4).⁷⁰

The widest *aulos*-based concord envisaged by Aristoxenus and Aristotle’s unnamed Pythagoreans, then, differs from Plato’s lyre-based representation of the harmony of the *kosmos* by a tone, identified by the ratio 24:27.⁷¹ This extra tone, which is repeatedly mentioned in ancient commentaries on Plato’s *Timaeus*,⁷² is also the interval that makes the upper sixth of the scale recognizably Phrygian: in fact it is the highest note of the scale, *a*′′, that identifies *g*′′ as Phrygian *mesē*, since *mesē* is by definition the note that lies ‘below the disjunctive tone’ (Cleonides *Isag.* 201.18–20).

70 Cf. Hagel 2005, who presents the relevant sources and advances interesting hypotheses about their relationship to practical *aulos* models; I shall offer a different reconstruction elsewhere in due course.

71 Cf. Plut. *De an. procr.* 1018e, where we are told that the Pythagoreans identified the number twenty-seven with the tone.

72 E.g. Theo Sm. *Math. Plat.* 63.25–64.1; Plut. *De an. procr.* 1029b–c. Plutarch’s observation that Plato ‘added this tone at the top’ (ἐπὶ τὸ ὀξύ προσλαμβάνων), as opposed to the widespread practice of ‘the moderns’ to add it to the bottom of the scale (οἱ δὲ νεώτεροι τὸν προσλαμβάνόμενον, τόνω διαφέροντα τῆς ὑπάτης, ἐπὶ τὸ βαρὺ τάξαντες κτλ.), is especially useful for our purposes, as it confirms that Plato’s *Timaeus* scale is to be conceived as an ascending one.

7 Conclusions: Musical Education and the Model of the Lyre *Harmonia*

This full agreement between the lyre modes selected in *Republic* 3 and the *harmonia* of the Whole described in the *Timaeus* becomes all the more noteworthy because the *Timaeus* is explicitly characterised as an ideal continuation of the *Republic*. Indeed, Socrates' opening summary of the key points established in the *Republic* (*Tim.* 17a-19a) singles out the crucial role that the lyre-based musical education received by the Guardians will play in the development of their double psychological nature, gentle with their fellow citizens and harsh with enemies: that is to say, precisely the two ethical traits associated with the Dorian and the Phrygian modes in the *Republic*.

The musical modes that the Guardians will learn to play on their lyres will literally make their souls 'well-shaped' (*euschēmona*, *Resp.* 3.401d), moulding them to the 'befitting and inborn *schēma*' (*Tim.* 33b) that informs the fundamental *harmoniai* of the *kosmos*, and will resonate in them too when they will become suitably aggressive or gentle in different circumstances.⁷³ And it is exactly in the realm of practical musical education that Plato and his contemporaries would have encountered for the first time the basic shape of the *harmonia* that informs all lyre tunings, as well as the skeleton of the *Timaeus* scale. In fact this framework of two tetrachords separated by a tone—something that looks terribly abstract to modern readers—arises from what was probably the first, and most essential, practical notion learned by lyre students in antiquity: how to tune their instruments.

Many sources—including Philolaus, Aristoxenus and later technical treatises⁷⁴—indicate that ancient lyres were tuned 'by means of consonances' (*dia symphōnias*), not unlike modern string instruments. After setting the pitch of one string—most likely the intermediate note *mesē*, which as we have seen above was known as the 'origin' or the 'leader'—all of the other strings were tuned by intervals of fourths and fifths: starting from *mésē* = *f*, the performer

73 One can only speculate whether the slightly larger gamut occupied by the Phrygian octaves in the *Timaeus* scale has any wider significance; perhaps it could point to the need for the Guardians (and the universe at large?) to embody more often the peaceful model of temperance than the war-like attitude proper to the Dorian mode (*Resp.* 3.399a5-c6). More generally, cf. *Tim.* 44a-b on the natural *schēma* of the *harmonia* (43d) to which the inner motions of the soul are restored by means of education. On the Dorian lyre mode as a model of war-like virtue to be embodied in one's actions, cf. Plat. *Lach.* 188d. On the use of lyre music to shape the soul of young children, see Plat. *Prot.* 326a-c; cf. [Plut.] *De mus.* 1145d-f, with Raffa 2011.

74 E.g. Aristox. *El. harm.* 68.10-70.2 Da Rios; [Eucl.] *Sect. can.* prop. 17.

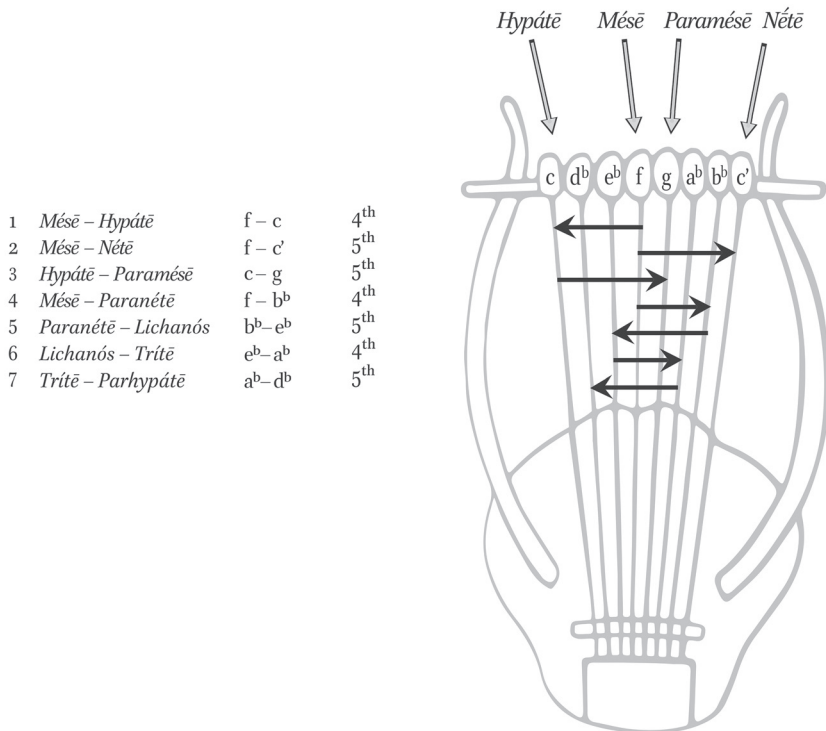


FIGURE 9 Tuning by consonances—*Exempli Gratia* eight-string lyre tuning, Dorian diatonic mode (cf. Franklin 2005, 16)

tuned *hypatē*, (*c*), *nētē* (*c'*), and *paramesē* (*g*). Once this basic framework was established, an interlocking series of fourths and fifths was employed to ‘fill out’ the whole tuning with ‘intermediate notes’ (*ta metaxy*) that define the interval sequence of a given mode. For example, in the case of the Dorian diatonic mode (St-T-T-T-St-T-T), the performer simply continued in steps of ascending fourths and descending fifths until the whole scale was set.⁷⁵

These observations allow us to understand better why Plato chose the model of the lyre *harmonia* over other possible images—musical or otherwise—in order to depict the orderly organisation of the parts of a just soul, as well as

75 Figure 9 represents the tuning cycle employed on an eight-string lyre; in the case of traditional seven-stringed lyres, passages 5 and 6 would not entail two separate strings (*paranētē* and *tritē*) but only one (*tritē*): this string would be first tuned to *b^b* and then adjusted to *a^b* after setting *lichanos* *e^b*.

the harmony of the universe as a whole. Based on simple and mathematically elegant relations, this model was familiar to well-educated Athenians such as Plato's original readers, who learned to tune and play the lyre since the very beginning of their liberal education;⁷⁶ at the same time, it evoked a prestigious cultural history that made it a symbol of the natural, but not strifeless, order of the *kosmos*.

In Plato's hands, the simple and flexible beauty of this *harmonia* became the perfect embodiment of the full correspondence between the essence of human souls and the natural, immutable *nomos* of the universe: an immortal order created and sustained by the central role of *logos* ('reason' and 'ratio'); a wondrous correspondence of opposites that embraces in itself justice, temperance and courage; an amazing natural order whose beauty can be readily perceived by the senses.

This choice reveals also how the musical discussions of *Republic* 3-4 and that of the *Timaeus* are based on a coherent musical and theoretical vision. The ethically oriented musical selection undertaken by Socrates and Glaucon in *Republic* 3 led them to choose the same lyre tunings that underpin the hyperbolic harmony of the Soul of the Whole in the *Timaeus*. And they had previously offered an evocative characterisation of the psychological effects of music and gymnastics as 'tending' and 'relaxing' the different parts of the soul until they are perfectly 'harmonised' to each other: that is to say, exactly the outcome envisaged for the ideal harmony of a just soul depicted in Book 4, and the foundation for the harmony of the *kosmos* at large.

Appendix: the Soul of the Whole Is Not Only *Nous*

This Appendix briefly sets out evidence from Plato's *Timaeus* and a few related dialogues that shows how, contrary to some widespread assumptions, the Soul of the Whole cannot be wholly identified with its rational component (*nous*) to the exclusion of any 'irrational'/'extra-rational'/'emotional' elements (*alogoi*), and does not entail exclusively cognitive activities.

Such 'hyper-rational', uncompromisingly dualist views underlie much of the scholarship on the *Timaeus*,⁷⁷ but seem untenable to me in the face of clear textual evidence

76 E.g. Ar. *V*. 959, where the expression 'he doesn't know how play the lyre' (χαρίζεσθαι γὰρ οὐκ ἐπιστάται) is identified with a lack of education and good manners; cf. *V*. 989.

77 E.g. Pelosi 2010, 68-113; but see the cautionary remark given in the introduction to the same book: '*mind* indicates a narrower domain than *psychē*, to which belong not only

to the contrary. These passages, set out below, unambiguously indicate that the Soul of the Whole does not include only *nous*, and is not a wholly ‘rational’ and strifeless entity to be sharply distinguished from any kind of ‘extra-cognitive’, ‘emotional’ or ‘irrational’ elements. On the contrary, as mentioned in some classic works on the *Timaeus*,⁷⁸ the Soul of the Whole is represented in Plato’s ‘likely myth’ (*eikos mythos*, *Tim.* 29c-d) as a complex whole, which comprises in itself the ruling principle of *nous* as well as other ‘emotional’/‘irrational’ elements.

This distinction between *nous* and *psychē* is explicitly outlined the first time that the Soul of the Whole is mentioned in this dialogue:

Thinking in this way he (i.e. God/the Constructor) found that, among the works which are visible by nature, none that is without *Nous* shall ever be more beautiful as a whole than a work which has *Nous*,⁷⁹ but *Nous* could not possibly come into being in separation from the Soul (νοῦν δ’ αὖ χωρὶς ψυχῆς ἀδύνατον παραγενέσθαι τῷ). Because of this very thought, having placed *Nous* in the Soul, and the Soul in the Body, he constructed the Whole (νοῦν μὲν ἐν ψυχῇ, ψυχὴν δ’ ἐν σώματι συνιστάς τὸ πᾶν συνετεταίνετο), so that the work he fashioned would be most beautiful and the best by nature. Hence this is how we must tell the story in accordance with the likely *logos*: that the *kosmos* came into being as a living entity endowed with a Soul and with *Nous* because of the foreknowledge of God.

Tim. 30a-c

This passage could not be clearer: *Nous* is a crucial component of the Soul, but it is by no means the identical to the Soul as a whole. If Plato believed that the Soul of the Whole was simply identical to *Nous*, he would not have crafted such a complex image and phrasing; he would have said so in one simple sentence.

The same concept is stated again at the very end of the section that deals with the structure of the Soul of the Whole. This section comprises not only an account of the harmonic *logos* that informs its ‘fabric’ (*Tim.* 35b4-36b6, discussed above), but also a complex description of its subsequent division into a unitary external circle of the ‘Same’, which moves at a constant speed, and an inner circle of the ‘Different’, which

intellective, cognitive, emotive and perceptive processes but, more generally, the vital processes’ (Pelosi 2010, 2 n. 3).

78 E.g. Cornford 1935, 76, 176, 208, 361-64; Brisson 1974, 439.

79 I have capitalised the occurrences of *Nous* that are not accompanied by the article in Greek, presumably referring to the ‘universal’/ ‘cosmic’ *Nous*. Instances that are accompanied by the article in Greek, and seem to refer to individual *nous*, are not capitalised.

is itself divided into seven unequal rings moving at various different speeds.⁸⁰ After this intricate description, we are told that this intrinsically compound but well-divided Soul⁸¹ is harmonically attached to the Body of Heaven and brings it to life (36e-37a), remaining ‘invisible but partaking in reasoning and harmony’ (αὐτὴ δὲ ἀόρατος μὲν, λογισμοῦ δὲ μετέχουσα καὶ ἀρμονίας ψυχῇ). Through the metaphysically loaded language of *methexis*, this expression indicates once again that the Soul of the Whole ‘partakes in’ reasoning—i.e. it is not only or fully *logismos*, or only *nous*.

This preliminary indication is fleshed out in the subsequent description of the Soul’s inner responses to different kinds of stimuli:

αὐτὴ τε ἀνακυκλουμένη πρὸς αὐτήν, ὅταν οὐσίαν σκεδαστὴν ἔχοντός τινος ἐφάπτηται καὶ ὅταν ἀμέριστον, λέγει κινουμένη διὰ πάσης ἑαυτῆς ὅτω τ’ ἂν τι ταῦτόν ἢ καὶ ὅτου ἂν ἕτερον, πρὸς ὅτι τε μάλιστα, καὶ ὅπῃ καὶ ὅπως καὶ ὁπότε συμβαίνει κατὰ τὰ γιγνόμενά τε πρὸς ἕκαστον ἕκαστα εἶναι καὶ πάσχειν, καὶ πρὸς τὰ κατὰ ταῦτά ἔχοντα αἰεὶ. λόγος δὲ ὁ κατὰ ταῦτόν ἀληθής, γιγνόμενος περὶ τε θάτερον ὃν καὶ περὶ τὸ ταῦτόν, ἐν τῷ κινουμένῳ ὑφ’ αὐτοῦ φερόμενος ἄνευ φθόγγου καὶ ἡχῆς, ὅταν μὲν περὶ τὸ αἰσθητὸν γίγνηται καὶ ὁ τοῦ θατέρου κύκλος ὀρθὸς ἰὼν εἰς πᾶσαν αὐτοῦ τὴν ψυχὴν διαγγείλῃ, δόξαι καὶ πίστει γίγνονται βέβαιοι καὶ ἀληθεῖς, ὅταν δὲ αὖ περὶ τὸ λογιστικὸν ἢ καὶ ὁ τοῦ ταῦτοῦ κύκλος εὐτροχος ὦν αὐτὰ μηνύσῃ, νοῦς ἐπιστήμη τε ἐξ ἀνάγκης ἀποτελεῖται· τούτω δὲ ἐν ᾧ τῶν ὄντων ἐγγίγνεσθον, ἂν ποτέ τις αὐτὸ ἄλλο πλὴν ψυχὴν εἴπῃ, πᾶν μᾶλλον ἢ τάλιθές ἐρεῖ.

Tim. 37a-c

Revolving around herself, whenever she (scil. the Soul) touches upon anything that possesses a dissoluble essence or an undivided essence, she speaks, being moved through her entire self, and says what this object is identical to and from what it is different, as well as in what respect it is so the most; and she says also in what way, how and when it comes to pass that each thing exists and feels/suffers (*einai kai paschein*), both with reference to things that become (*kata ta gignomena*) in relation to each other, and in relation to things that have always the same features (*ta kata tauta echonta aei*). This account/speech (*logos*) is indeed true according to itself (*kata tauton*), as it comes into being concerning both what is different and what is the same, and is carried on in what is moved by itself without tones or sounds.

80 For a detailed discussion of this passage, see Cornford 1935, 72-94 (esp. 76 on the nature of the ‘supremacy’ of the circle of *Nous* over the rest of the Soul). Plato was probably referring to a device similar to an armillary sphere: cf. *Tim.* 40d1-3, with Jones 2017, 239.

81 *Tim.* 37a4-5: συγκαρθεῖσα μοιρῶν, καὶ ἀνὰ λόγον μερισθεῖσα καὶ συνδεθεῖσα.

But whenever this speech becomes concerned with what is perceived (*peri to aisthēton*) and the circle of the Different, moving correctly, announces itself to the whole Soul, opinions and beliefs (*doxai kai pisteis*) which are firm and true (*bebaioi kai alētheis*) come into being. Whenever it becomes a discourse about what is rational (*peri to logistikon*) and the circle of the Same, running smoothly, reveals these things, Intellect (*Nous*) and scientific knowledge (*epistēmē*) are brought to completion out of necessity. These two things come into being among the things that are; and if anyone ever said that this was something other than the Soul, he would be stating anything but the truth.

This passage describes how the Soul as a whole (*dia pasēs heautēs*) responds when it ‘comes into contact’ with different objects of thought and objects of perception, and produces an account of their theoretical features, their existence and their ‘affections/passions’ (*paschein/pathēmata*, cf. *Resp.* 7.511d7, *Phlb.* 39a) both in relation to ever-identical principles (*ta kata tauta echonta aei*) and in relation to the objects of the world of becoming (*kata ta gignomena*).⁸²

Just like the inner responses and thoughts of individual souls, the Soul’s resulting ‘speech’ (*logos*) takes place within the Soul itself without perceivable sounds. As long as this inner *logos* concerns what is always ‘the same’, it is simply true. But the situation becomes more complex when it takes into account both ‘what is different’ and ‘what is the same’, and so the Soul responds differently depending on the nature of the object of her *logos*. When the Soul’s discourse focuses on ‘what is perceived’ (*to aisthēton*), it is the circle of the Different that takes the lead and announces its verdict to the Soul as a whole: given that its movements proceed correctly, it produces ‘opinions and beliefs which are firm and true’.⁸³ When the Soul examines objects of pure reasoning (*to logistikon*), it is the circle of the Same that responds and, continuing in its smooth circular movement, produces ‘Intellect (*Nous*) and scientific knowledge (*epistēmē*)’.

This passage indicates clearly that *Nous* is just one component of the Soul of the Whole—the ruling and most excellent part (36c-d), which responds to purely rational considerations and offers invariably true answers. But the Soul of the Whole comprises also another kind of inner pronouncement which results from its coming into contact with, and responding to, ‘what is perceived’ and the world of becoming—in other words, not out of purely rational considerations.

82 Cf. *Tim.* 52a-e.

83 If these inner movements of the Different were to be ‘incorrect’, the resulting *doxai* and *pisteis* would be false: this event may occur in individual human souls (cf. *Phlb.* 39a-c), but not in the Soul of the Whole.

At the end of the revised account of the Soul of the Whole⁸⁴ we are told that this second *genos* 'is irrational' (τὸ δὲ ἄλογον), 'perceivable' (αἰσθητόν) and apprehended by 'opinion joined with perception' (*doxei meth' aisthēseōs*, *Tim.* 52a).⁸⁵ Hence an 'irrational'/'extra-rational' element (*alogos*) is explicitly comprised in the *harmonia* of the Soul of the Whole, alongside the perfectly rational and self-consistent one of *Nous*. The Soul of the Whole originates, and contains in itself, both of these movements which are necessary to give life to the *kosmos* as a whole.

The resulting epistemological picture is perfectly consistent with the one outlined in the famous image of the divided line given in the *Republic* (6.509d-511e, 7.534a-b): out of the four 'affections/passions that occur in the soul' (παθήματα ἐν τῇ ψυχῇ γιγνόμενα, 7.511d7), two belong to the 'higher' realm of *noēsis* (namely *epistēmē* and *dianoia*) and concern unchanging essence (*ousia*), and two belong to 'lower' realm of *doxa* (namely *pistis* and *eikasia*) and concern the world of becoming (*genesis*). On a psychological level too, the picture outlined in this passage of the *Timaeus* is consistent with the one given in the *Republic*: the element concerned with what is rational (*to logistikon*) produces purely rational *logoi* (4.439d, 10.602d-e), whereas the 'extra-rational'/'emotional' parts of the soul hold opinions (*doxein*, *doxazein*, e.g. 4.442d, 10.602e-603a).⁸⁶

This compound, rational-cum-emotional nature of the cosmic *Psychē* is further confirmed in the final part of the *Timaeus*' 'likely myth' about its creation by the Demiurge, which concerns the generation of individual human souls. These souls are created following the same 'recipe' as the Soul of the Whole, using the 'leftovers' of the same basic constituents (Same, Different and Being). These elements, however, are not perfectly 'unmixed', as in the case of the Soul of the Whole, but are 'second and third' in degree of purity. After combining them in keeping with the same *harmonia* that

84 This fuller account (*Tim.* 47eff.) is a revised version of the first, and introduces another element of complexity into the system: the crucial role played by the so-called 'wandering cause' (τὸ τῆς πλανωμένης εἶδος αἰτίας), which derives from the role played by Necessity alongside Reason.

85 It is significant that persuasion is given great emphasis in this second account: whereas *Nous* is not influenced by persuasion and arises through teaching and study (*didachē*), true *doxa* is said to be generated in us by persuasion (*Tim.* 51a). So this second part is *alogos* but not entirely deaf to the voice of reason—a distinction akin to the relationship between *logistikon* and *thymoeidēs* (see next note, and *Tim.* 69e-70d).

86 On the beliefs about justice held by the 'flaring/fiery part' (*thymos/thymoeidēs*), cf. Wilburn 2015, with further bibliography. See also *Resp.* 4.444a above, on the role of *epistēmē/sophia* and *doxa/amathia* in determining the behaviour of a just soul; and *Tim.* 71e on the fact that *epithymētikon* too occasionally has access to truth through inspired divination.

shaped the Soul of the Whole (cf. *Tim.* 43d-e), the Demiurge puts these newly-created souls into some kind of ‘chariot’⁸⁷ in order to show them the ‘nature of the Whole’, and declares unto them the basic ‘laws of destiny’. The last of these laws sets out what will happen to them after their embodiment:

But whenever they are implanted into bodies by Necessity, and some things get into their body and others get out of it, it is necessary for perception (αἴσθησιν) to come into being as one for all, born within them out of forceful passions (ἐκ βιαίων παθημάτων σύμφυτον γίνεσθαι). Secondly passional desire comes into being, mixed with pleasure and pain (ἡδονῇ καὶ λύπῃ μειγμένον ἔρωτα); next to these fear and flare (φόβον καὶ θυμόν) and all such things that follow them—as well as those things which, on the contrary, are naturally set apart from them. If they manage to rule these elements, they shall live in justice; if they are ruled by them, in injustice.

Tim. 42a-b

Shaped after the same pattern as the Soul of the Whole, these human souls are implanted into mortal bodies and begin to perceive the stimuli of *aisthēsis*; and their reactions to, and interpretations of, these stimuli produce different kinds of emotional responses. If such aesthetic-cum-rational experiences are managed correctly (i.e. they are set in the right balance, and not entirely suppressed—cf. *Tim.* 43c-44d), human souls will live and act justly; if not, they will live unjustly.

Interpreters who conflate Plato’s account of the *Psychē* of the Whole with *Nous* alone are bound to regard this association of ‘extra-rational’/‘emotional’ responses with the parts of the soul that individual human souls share with the Soul the Whole as ‘a strange incongruence’ (Pelosi 2010, 99). However, as we have seen above, neither the previous account of the Soul of the Whole nor the present passage are concerned with pure reason only. Both explicitly depict *Psychē* as a compound entity that combines *Nous* with *aisthēsis* in a unified living being, which experiences *pathēmata* in

87 As already pointed out by Cornford 1935, 144, this reference to chariots evokes the mythical image outlined in the *Phaedrus*, where ‘disembodied’ and immortal individual souls, both human and divine, are depicted as chariots that contain three elements in themselves: *nous*, the charioteer/leader, as well as the two ‘passionate’ and energetic horses (246a-250c). Hence individual ‘disembodied’ souls are not reason alone either, both in the *Phaedrus* and in the *Timaeus*.

response to cognitive and aesthetic experiences—just as the Demiurge⁸⁸ and ideal philosopher are filled with wonder and joy while observing the elegant movements of the planets or hearing the beautiful sounds of musical *harmoniai* (*Tim.* 80b5-8; cf. *Resp.* 7.529d-531c).

Unlike human individual souls, however, the Soul of the Whole is never mistaken in its judgements and responses—whether theoretical or aesthetic—because it is perfectly complete and does not lack anything in itself. The Whole that is brought to life by the Soul is ‘one living being that contains in itself all living beings, both mortal and immortal’ (*Tim.* 69c), including all ‘their forcible and necessary *pathēmata*, pains, fears and pleasures’ etc. (*Tim.* 69d; cf. *Leg.* 10.897a-b). Therefore, the evaluations and responses of this universal Soul are unfailingly correct, being based on a full and intimate knowledge of every aspect and component of the whole *kosmos*, as well as their orderly, if complex, *harmonia*.

But this *harmonia*, in keeping with a long philosophical tradition, is not a ‘static’ and ‘strifeless’ entity, a wholly peaceful or exclusively rational order that leaves no room for conflict or contrasts. On the contrary, the *harmonia* of the Soul is a complex dynamic system which organises and contains in itself such inherently contrasting natural forces, combining the movements of reason and emotions into a beautiful living Whole (ἐκ τῶν διαφερόντων καλλίστην ἁρμονίαν, Heraclitus 22 B 8 Diels & Kranz).

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88 At *Tim.* 37c-d, we are told that the Demiurge himself ‘was delighted and rejoiced’ (ἡγάσθη τε καὶ εὐφρανθεῖς) in observing the wonderful living being he created and its movements—a passage which clearly shows that, in Plato's view, divine souls feel emotions too. Cf. *Phlb.* 63e-64e (on true and pure pleasures, their divine quality, and the ‘most precious and beloved’ mixture of the good based on beauty and proportion) and 65a-67a (on the insufficiency and incompleteness of both pleasures and *nous* by themselves, as opposed to their well-proportioned, beautiful and correct mixture).

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The Notion of *Synthesis* in Harmonic Science (and Beyond)

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Abstract

In ancient Greece, harmonics fully acquires the dignity of ‘science’ thanks to Aristoxenus of Tarentum, who first gives an account of a rigorous method of analysis of the structures underlying melodies. One of the most interesting concepts discussed in his extant writings is the notion of *synthesis*, which he uses to describe any orderly combination of elements (whether they are sounds, intervals or letters) into a sequence. This principle, which according to him governs the way of combining items in patterns, is described as a ‘natural’ principle (i.e. inherent in *melos* or *lexis*) and lies at the very bottom of his idea of ‘attuned melody’ (*melos hērmomenon*), the specific object under investigation in his harmonics. The purpose of this paper is to highlight the pivotal significance of this notion within Aristoxenus’ thought and to identify its reception in later authors, not only within harmonics but also within the realm of rhetoric.

Keywords

synthesis – harmonic science – rhetorics – Aristoxenus – Dionysius of Halicarnassus

1 Introduction¹

In ancient Greece, the first full description of the theoretical principles governing musical sounds can be ascribed to Aristoxenus of Tarentum, who

¹ A preliminary version of this paper has been discussed at the International Conference titled “Harmonic Science in Ancient Greece”, held in Berlin in April 2018. I thank all the

established a rigorous method for analysing the structures underlying melodies and introduced new ways of conceptualizing and describing musical phenomena. As he boasts in several passages of the *Elementa harmonica* (his most important—and only surviving—work on the topic, preserved from the manuscript tradition in three books, the third of which incomplete),² nobody before him had systematically given these matters “demonstrations which conform to the appearances” using arguments and principles specific to this *epistēmē*, that is, borrowed neither from physics nor mathematics.³ Despite the rhetoric of Aristoxenus’ words, it is certainly true that he did more than any previous theorist to give harmonics the status of ‘science’ thanks to a detailed explanation of its basic principles.

Among the numerous and pivotal concepts introduced by Aristoxenus, the notion of *synthesis* (“composition”) enjoys a special status. This term recurs quite often in the *Elementa harmonica*, mainly in reference to the process by which melodic sounds and intervals are assembled together to form greater structures. The first occurrence is in *Harm.* 5.4f. M = 9.14f. DR: “when we come to composite intervals, which in a way are the same as *systemata*, we must find something to say about the *synthesis* of incomposite intervals”. At first glance, *synthesis* appears here to be a purely descriptive term, mentioned to identify which intervallic magnitudes (composite or incomposite, as if to say divisible or not) are peculiar to a specific scale.⁴ Upon closer inspection, it becomes

participants to the conference for their valuable comments and suggestions, and the organizers Sara Panteri and Sinem Kiliç for their wonderful organization.

- 2 The conventional division of the *Elementa harmonica* into three books (still maintained by the most recent critical edition of the text, see Da Rios 1954) has nowadays become almost unanimously rejected thanks to the correct reading, in the earliest codices, of the title “*Prōtōn* (Before) the Harmonic Elements”, corrupted throughout the manuscript tradition into “*Prōton* (The First Book) of the Harmonic Elements” (cf. Mathiesen 1999, 295-8). The translations of Aristoxenus’ texts quoted in this article are from Barker 1989; those of Dionysius of Halicarnassus’ works from Usher 1974 and 1985. All the other translations are from the relevant volumes of the *Loeb Classical Library*.
- 3 Aristox. *Harm.* 32.19-21 Meibom = 41.12-14 Da Rios (hereafter M and DR): “we try to give these matters demonstrations which conform to the appearances not in the manner of our predecessors, some of whom used arguments quite extraneous to the subject (ἀλλοτριολογούντες)”. Cf. *ibid.* 44.15-20 M = 55.3-6 DR: “in general we must be very careful, as we set out, not to slip into extraneous territory (μήτ’ εἰς τὴν ὑπερορίαν ἐμπίπτωμεν) by beginning from a conception of sound as a movement of the air”.
- 4 To give an example: in a chromatic scale, the same interval—for instance a tone—may cover the distance between *mesē* and *paramesē* (and hence be incomposite, *asyntheton*, i.e., with no possibility of being split into two smaller intervals) or the distance between *hypatē* and *lichanos* (and be, in this case, divisible into two semitones, a semitone from *hypatē* to *parhypatē* and a semitone from *parhypatē* to *lichanos*).

clear how the structural principles governing melodic sequences (summarized by the term *synthesis*) lie at the very foundations of the Aristoxenian approach to harmonics, as essential for the development of his idea of “attuned melody” (*to hērmosmenon melos*). The purpose of this paper is to highlight the pivotal significance of this concept in his scientific thought and to identify its precedents, as well as its echoes, in later authors in fields other than harmonics.⁵

2 The Notion of *Synthesis* in Aristoxenus’ Harmonic Science

Immediately after the first mention of the term within the *Elementa harmonica*, the importance of the subject is made clear by the criticism expressed by the author about most of the *harmonikoi* (earlier students of harmonics), blamed for completely disregarding such an important argument, or—as in the case of Eratocles and his school—for not properly addressing the question:

ἀναγκαῖον δὲ ἀπτομένοις ἡμῖν συνθέτων διαστημάτων οἷς ἅμα καὶ συστήμασιν εἶναι πως συμβαίνει περὶ συνθέσεως ἔχειν τι λέγειν τῆς τῶν ἀσυνθέτων διαστημάτων. περὶ ἧς οἱ πλείστοι τῶν ἀρμονικῶν οὐδ’ ὅτι πραγματευτέον ᾗσθοντο· δῆλον δ’ ἡμῖν ἐν τοῖς ἔμπροσθεν γέγονεν. οἱ δὲ περὶ Ἑρατοκλέα τοσοῦτον εἰρήκασιν μόνον ὅτι ἀπὸ τοῦ διὰ τεσσάρων ἐφ’ ἑκάτερα δίχα σχίζεται τὸ μέλος, οὐδὲν οὐτ’ εἰ ἀπὸ παντὸς τοῦτο γίγνεται διορίσαντες οὔτε διὰ τίνα αἰτίαν εἰπόντες οὔθ’ ὑπὲρ τῶν ἄλλων διαστημάτων ἐπισκεψάμενοι τίνα πρὸς ἄλληλα συντίθενται τρόπον, καὶ πότερον παντὸς διαστήματος πρὸς πᾶν ὠρισμένος τίς ἐστὶ λόγος τῆς συνθέσεως καὶ πῶς μὲν ἐξ αὐτῶν πῶς δ’ οὐ γίγνεται συστήματα ἢ <εἰ> τοῦτο ἀόριστόν ἐστιν· περὶ γὰρ τούτων οὐτ’ ἀποδεικτικὸς οὐτ’ ἀναπόδεικτος ὑπ’ οὐδενὸς πῶποτ’ εἴρηται λόγος. οὕσης δὲ θαυμαστῆς τῆς τάξεως περὶ τὴν τοῦ μέλους σύστασιν ἀταξία πλείστη μουσικῆς ὑπ’ ἐνίων κατέγνωσται διὰ τοὺς μετακεχειρισμένους τὴν εἰρημένην πραγματεῖαν. οὐδὲν δὲ τῶν αἰσθητῶν τοσαύτην ἔχει τάξιν οὐδὲ τοιαύτην. ἔσται δ’ ἡμῖν δῆλον τοῦθ’ οὕτως ἔχον, ὅταν ἐν αὐτῇ γενώμεθα τῇ πραγματεῖᾳ.

Aristox. *Harm.* 5.2-31 M = 9.12-10.9 DR

And when we come to composite intervals, which in a way are the same as *systemata*, we must find something to say about the synthesis of composite intervals. Most of the harmonicists did not even realise that this is a subject to be considered, as became clear in our earlier work. The school of Eratocles got as far as saying simply that the melodic sequence splits into two as it moves in either direction from the interval of a fourth, but

5 A recent book pointing out the great advantages of using the notion of *synthesis* across different scientific disciplines and technologies is Gramelsberger, Bexte, and Kogge 2013.

without distinguishing whether this division originates from all fourths, or saying what the reason for it is, and *without enquiring in what way the other intervals are put together with one another, and whether there is some definite principle governing the synthesis of every interval with every other, and governing the ways in which systēmata arise from them and in which they do not, or whether this is quite indeterminate*. No account of these things, with or without demonstration, has ever yet been given by anybody. *Though the putting together of melody has in fact a remarkable orderliness*, music has been accused by some people of extreme disorder, because of those who have handled incompetently the science we are discussing; *yet none of the objects of perception displays so great or so fine an order*. That this is so will become clear to us when we have actually embarked upon the science.

In this passage, the (apparently) incidental criticism of these theorists leads Aristoxenus to mention the existence of specific principles governing the combination of intervals. Thanks to them, he observes, any resulting melody displays a “remarkable orderliness” (*thaumastē taxis*, 5.24 M = 10.4 DR), greater, in terms of quantity and quality (*tosautēn* and *toiautēn*, 5.29f. M = 10.7f. DR), than the order shown by any other object of perception. The direct consequence of this assumption is postponed until later in the text, when Aristoxenus points out the main topic of harmonic science and discusses its nature: the harmonized melody (*to hērmomenon melos*), whose ‘correct’ (see *orthōs*) constitution relies primarily on a proper *synthesis*.

Τούτων δ' οὕτως ἀφωρισμένων τε καὶ προδιηρημένων περὶ μέλους ἂν εἴη ἡμῖν πειρατέον ὑποτυπῶσαι τί ποτ' ἐστὶν ἡ φύσις αὐτοῦ. ὅτι μὲν οὖν διαστηματικὴν ἐν αὐτῷ δεῖ τὴν τῆς φωνῆς κίνησιν εἶναι προεῖρηται, ὥστε τοῦ γε λογώδους κεχώρισται ταύτῃ τὸ μουσικὸν μέλος ... ἐπεὶ δ' οὐ μόνον ἐκ διαστημάτων τε καὶ φθόγων συνεστάναι δεῖ τὸ ἡρμοσμένον μέλος, ἀλλὰ προσδεῖται συνθέσεώς τινος ποιᾶς καὶ οὐ τῆς τυχούσης—δῆλον γὰρ ὡς τό γ' ἐκ διαστημάτων τε καὶ φθόγων συνεστάναι κοινόν ἐστιν, ὑπάρχει γὰρ καὶ τῷ ἀναρμόστῳ—, ὥστ' ἐπειδὴ τοῦθ' οὕτως ἔχει, τὸ μέγιστον μέρος καὶ πλείστην ἔχον ῥοπήν εἰς τὴν ὀρθῶς γιγνομένην σύστασιν τοῦ μέλους <τὸ> περὶ τὴν σύνθεσιν που καὶ τὴν ταύτης ιδιότητα ὑποληπτέον εἶναι ... περὶ ἧς ἐν τοῖς ἔπειτα δειχθήσεται τίς ἐστὶν αὐτῆς ὁ τρόπος, πλὴν ἐπὶ τοσοῦτόν γ' εἰρήσθω καθόλου καὶ νῦν, ὅτι πολλὰς ἔχοντος διαφορὰς τοῦ ἡρμοσμένου κατὰ τὴν τῶν διαστημάτων σύνθεσιν, ὅμως ἔστι τι τοιοῦτον ὃ κατὰ παντὸς ἡρμοσμένου ῥηθήσεται ἐν τε καὶ ταυτόν, τοιαύτην ἔχον δύναμιν οἷαν αὐτὴν ἀναιρουμένην ἀναιρεῖν τὸ ἡρμοσμένον. ἀπλοῦν δ' ἔσται προιούσης τῆς πραγματείας.

With these definitions and preliminary distinctions behind us, we must now consider melody, and try to outline what its nature is. We have already said that the movement of the voice in it must be intervallic, so that musical melody has been distinguished in this way from the melody of speech, at any rate [...]. *But harmonically attuned melody (to hērmosmenon melos) must not only consist of intervals and notes: it demands also a way of putting them together which is of a special kind, and not haphazard,* since it is plain that the property of being constituted out of intervals and notes is of wider scope, belonging also to that which is harmonically ill-attuned (*anharmoston*). Since this is so, it must be granted that *the most important factor, and the one carrying the greatest weight in the pursuit of the correct constitution of melody, is that which deals with the process of combination and its special peculiarities* [...]. For the present let me say at least this much, in a general way: that although what is harmonically attuned puts its intervals together in many different ways, nevertheless *there is a feature which we shall assert to be one and the same in everything that is harmonically attuned, whose power is such that its removal removes with it the attunement (to hērmosmenon)*. This will become clear as the investigation proceeds.

In these lines we are clearly told that *synthesis* consists in the procedure that leads to the creation of attuned melodies by providing their elements with a specific order (*taxis*). This process implies certain requirements, the most important of which is the so-called ‘law of fourths and fifths’,⁶ described later in Book 2 as the necessary—but not sufficient—condition for making intervallic combinations ‘melodic’ (*emmeleis syntheseis*):

ἐχόμενον δ' ἂν εἴη τὸ ἀφορίσαι τὸ πρῶτον καὶ ἀναγκαιότατον τῶν συντεινόντων πρὸς τὰς ἐμμελεῖς συνθέσεις τῶν διαστημάτων. ἐν παντὶ δὲ γένοι ἀπὸ παντὸς φθόγγου διὰ τῶν ἐξῆς τὸ μέλος ἀγόμενον καὶ ἐπὶ τὸ βαρὺ καὶ ἐπὶ τὸ ὀξὺ ἢ τὸν τέταρτον τῶν ἐξῆς διὰ τεσσάρων ἢ τὸν πέμπτον διὰ πάντε σύμφωνον λαμβανέτω, ᾧ δ' ἂν μηδέτερα τούτων συμβαίνει, ἐκμελὴς ἔστω οὗτος πρὸς ἅπαντας οἷς συμβέβηκεν ἀσυμφώνῳ εἶναι κατὰ τοὺς εἰρημένους ἀριθμούς.

Aristox. *Harm.* 53.33-54. 10 M = 67.4-11 DR

We must next give an account of *the first and most indispensable of the conditions that bear upon the melodic combination of intervals*. Let it be accepted that in every genus, as the melodic sequence progresses

⁶ Barker 2007, 131 and 198f.

through successive notes both up and down from any given note, it must make with the fourth successive note the concord of a fourth or with the fifth successive note the concord of a fifth. Any note which fulfils neither of these conditions must be considered unmelodic relative to all the notes with which it fails to form concords in the numerical relations mentioned.

We should not interpret, however, this feature as a rule superimposed upon melodic material by the Greek composers on aesthetic or cultural grounds. Melodic *synthesis* is repeatedly described by Aristoxenus as a ‘natural’ principle inherent in what is attuned:⁷ as if to say, the composition of intervals in the harmonized melody is not determined by the musician’s creativity, but by the ‘nature’ (*physis*) of the melody itself, an element of the natural world that has an innate tendency to move or change in specific ways.⁸ This property is exemplified by a parallel drawn between melodic *synthesis* and the combination of letters in language (quoted by Aristoxenus twice in the *Elementa harmonica* and once in the *Elementa rhythmica*, see below), a combination that is subject to similar rules of internal coherence, that is, within which the items (i.e. *grammata*) are analogously combined in meaningful patterns (i.e. *syllabai*):⁹

φαίνεται δὲ τοιαύτη τις φύσις εἶναι τοῦ συνεχοῦς ἐν τῇ μελωδίᾳ οἷα καὶ ἐν τῇ λέξει περὶ τὴν τῶν γραμμάτων σύνθεσιν· καὶ γὰρ ἐν τῷ διαλέγεσθαι φύσει ἡ φωνὴ καθ’ ἐκάστην τῶν ξυλλαβῶν πρῶτόν τι καὶ δεύτερον τῶν γραμμάτων τίθησι καὶ τρίτον καὶ τέταρτον καὶ κατὰ τοὺς λοιποὺς ἀριθμοὺς ὡσαύτως, οὐ πᾶν μετὰ πᾶν, ἀλλ’ ἔστι τοιαύτη τις φυσικὴ αὐξήσις τῆς συνθέσεως. παραπλησίως δὲ καὶ ἐν τῷ μελωδεῖν ὅμοιον ἡ φωνὴ τίθεναι κατὰ συνέχειαν τὰ τε διαστήματα καὶ τοὺς φθόγγους φυσικὴν τινὰ σύνθεσιν διαφυλάττουσα, οὐ πᾶν μετὰ πᾶν διάστημα μελωδοῦσα οὐτ’ ἴσον οὐτ’ ἄνισον ... ἀλλὰ πρὸς τὴν τῆς μελωδίας φύσιν πειρατέον βλέπειν κατανοεῖν τε προθυμούμενον τί μετὰ τί πέφυκεν ἡ φωνὴ διάστημα τίθεναι κατὰ μέλος.

Aristox. *Harm.* 27.16–28.24 M = 35.10–36.16 DR

7 Aristox. *Harm.* 36.24 M = 46.4 DR: μηδεμία τῶν συνθέσεων παρὰ φύσιν ἐστὶν ἐπισκέψεως τετύχηκεν.

8 Cf. Arist. *Phys.* 192b (on which see Barker 2007, 159). For Aristoxenus, musical melody was an element of the natural world perceived by the ear through its audible active representation, the *phōnē melodikē*, and was hence an object of a ‘physical’—in Aristotelian terms, cf. Arist. *Met.* 1026a12—enquiry.

9 For the precedents for this parallel: Plat. *Hp. Ma.* 285c–d; id. *Phlb.* 17a–e (where we find both the parallel between music and language, and the notion of musical *systema*). Cf. Porter 2018, esp. 218.

The nature of continuity in melody seems to be similar to that which in speech relates to the putting together of letters. For in speaking it is *natural* for the voice, in each syllable, to place some one of the letters first, others second, third and fourth, and so on for the other numbers. It does not place just any letter after any other: rather, *there is a kind of natural growth in the process of putting together.* In singing, similarly, when the voice places intervals and notes in succession, it appears to maintain *a natural principle of combination*, and not to sing every interval after every other, either when the intervals are equal or when they are unequal. [...] we must look for our evidence *in the nature of melody*, and try to concentrate on understanding which interval the voice *naturally* and melodically places after which.

ἔστι δὲ τοιαύτη τις ἡ περὶ τὸ ἐμμελές τε καὶ ἐκμελές τάξις οἷα καὶ ἡ περὶ <τὴν> τῶν γραμμάτων σύνθεσιν ἐν τῷ διαλέγεσθαι· οὐ γὰρ πάντα τρόπον ἐκ τῶν αὐτῶν γραμμάτων συντιθεμένη ξυλλαβὴ γίγνεται, ἀλλὰ πῶς μὲν, πῶς δ' οὐ.

Aristox. *Harm.* 37.2-6 M = 46.13-15 DR

And yet the order which relates to the melodic and unmelodic is similar to that concerned with the combination of letters in speech: from a given set of letters a syllable is not generated in just any way, but in some ways and not in others.

Ἔστι δὲ ἡμῖν γνώριμα τὰ περὶ τὴν τῶν γραμμάτων σύνθεσιν καὶ τὰ περὶ τὴν τῶν διαστημάτων, ὅτι οὐτ' ἐν τῷ διαλέγεσθαι πάντα τρόπον τὰ γράμματα συντίθεμεν, οὐτ' ἐν τῷ μελωδεῖν τὰ διαστήματα, ἀλλ' ὀλίγοι μὲν τινές εἰσιν οἱ τρόποι καθ' οὓς συντίθεται τὰ εἰρημένα πρὸς ἄλληλα, πολλοὶ δὲ καθ' οὓς οὔτε ἡ φωνὴ δύναται συντίθεσθαι φθεγγομένη, οὔτε ἡ αἴσθησις προσδέχεται, ἀλλ' ἀποδοκιμάζει. Διὰ ταύτην γὰρ τὴν αἰτίαν τὸ μὲν ἡρμοσμένον εἰς πολὺ ἐλάττους ιδέας τίθεται, τὸ δὲ ἀνάρμοστον εἰς πολὺ πλείους. Οὕτω δὲ καὶ τὰ περὶ τοὺς χρόνους ἔχοντα φανήσεται· πολλὰ μὲν γὰρ αὐτῶν συμμετρία τε καὶ τάξεις ἀλλότριαι φαίνονται τῆς αἰσθήσεως οὔσαι, ὀλίγαι δὲ τινες οἰκείαι τε καὶ δυναταὶ ταχθῆναι εἰς τὴν τοῦ ρυθμοῦ φύσιν.

Aristox. *Rhythm.* 2.8

The facts concerning the combining (synthesis) of letters and that of intervals are familiar to us, that is, that in talking we do not combine the letters in every way, nor do we so combine the intervals in singing: rather, there are only a few ways in which the things mentioned are combined

with one another, and many in which the voice cannot combine them in an utterance, and which perception does not accept favourably, but rejects as intolerable. It is for this reason that what is well attuned (*to hērmosmenon*) is arranged into far fewer forms, and what is ill attuned (*to anharmoston*) into far more. It will become apparent that the same is true of things to do with durations: for many of their proportions (*symmetriai*) and organisations (*taxeis*) are experienced as alien to perception, few as conformable to it and capable of being organised into the nature of rhythm.

These passages suggest that, for Aristoxenus, the notion of *synthesis* refers to the reassembling of elements that makes it possible to form new entities in contexts 'beyond' harmonics. Indeed, the way he employs this notion reminds us of its use in Aristotle's physics, where *synthesis* is often cited when describing the substance of natural bodies (both living and inanimate), even if it is not sufficient in itself to define them, for we need to take into account their form too.¹⁰ If, in Aristotle's *Generation and Corruption*, *synthesis* is discussed in connection with *mixis* and *krasis* (from which, however, it differs since its constituents are preserved and not blended in the whole, cf. *De gen. et corr.* 328a6-9), in his *Physics* the term *synthesis* is even assimilated to the ancient notion of *harmonia*. Indeed, any composition of elements that are joined into a compound unity gets its specific form in nature thanks to the proportion (*logos*) and order (*taxis*) of its constitutive items,¹¹ as earlier natural philosophers had already pointed out:

10 Arist. *Met.* 1043b4-8 (transl. Tredennick): "It appears, then, upon inquiry into the matter, that a syllable is not derived from the phonetic elements *plus* combination (*ἐκ τῶν στοιχείων οὐσα καὶ συνθέσεως*), nor is a house bricks *plus* combination. And this is true, for the combination or mixture is not derived from the things of which it is a combination or mixture". Cf. *ibid.* 1041b7-9 (where we are told that the substance is form: "Thus what we are seeking is the cause (i.e. the form) in virtue of which the matter is a definite thing; and this is the substance of the thing") and id. *De part. an.* 645a30-36 ("Just as in discussing a house, it is the whole figure and form of the house which concerns us, not merely the bricks and mortar and timber; so in Natural science, it is the composite thing, the thing as a whole/*περὶ τῆς συνθέσεως καὶ τῆς ὅλης οὐσίας*, which primarily concerns us, not the materials of it, which are not found apart from the thing itself whose materials they are", transl. Peck).

11 Cf. Arist. *Po.* 1450b34-37 (transl. Halliwell): "besides, a beautiful object, whether an animal or anything else with a structure of parts (*ἅπαν πρᾶγμα ὃ συνέστηκεν ἐκ τινῶν*), should have not only its parts ordered but also an appropriate magnitude: beauty consists in magnitude and order (*ἐν μεγέθει καὶ τάξει*)".

διαφέρει δ' οὐθέν ἐπὶ ἀρμονίας εἰπεῖν ἢ τάξεως ἢ συνθέσεως· φανερόν γάρ ὅτι ὁ αὐτὸς λόγος. ἀλλὰ μὴν καὶ οἰκία καὶ ἀνδριάς καὶ ὅτιοῦν ἄλλο γίγνεται ὁμοίως· ἢ τε γὰρ οἰκία γίγνεται ἐκ τοῦ μὴ συγκεῖσθαι ἀλλὰ διηρηθῆαι ταδί ὥδι, καὶ ὁ ἀνδριάς καὶ τῶν ἐσχηματισμένων τι ἐξ ἀσχημοσύνης· καὶ ἕκαστον τούτων τὰ μὲν τάξεις, τὰ δὲ σύνθεσις τίς ἐστίν.

Arist. *Phys.* 188b15-21¹²

It makes no difference whether we speak of 'harmony' or of arrangement or of combination in this connexion; for the principle is clearly the same. And so too with a house or a statue or any such product. For what the house replaces by being made is the unordered relation of the materials to each other; and what passes away in the making of the statue, or any other shapely work, is the unshapeliness of the material; for all such things are constituted either by the formative disposition or the combining of the material or materials.

So Aristoxenus, making the notion of *synthesis* a central issue in his ideas (probably inspired by Aristotle), gives it a value which resembles—for its significance—the Presocratic notion of ἀρμονία, which had been used to justify the harmonization of opposites in nature especially (but not exclusively) within Pythagorean circles.¹³

For Aristoxenus, however, *synthesis* is not a purely static feature of the melodic concatenations of intervals: it describes their 'sequential' combination (cf. Arist. *Po.* 1450a5, where the term refers to 'actions': *synthesis tōn pragmatōn*). In fact, as the treatise goes on, *synthesis* starts to give a dynamic character to *phōnē* (*Harm.* 19.9 M = 24.10 DR: τοιαύτην ἔχον δύνάμιν), as if it were its driving force towards specific melodic routes, as in the example of the combination of letters in language quoted above (*Harm.* 27.21-25 M = 35.13-16 DR: "in speaking it is natural for the voice, in each syllable, to place some one

12 Transl. Wicksteed and Cornford. For parallel passages (where, however, *harmonia* is not explicitly mentioned) see Arist. *De an.* 410a1-3 ("for any other compound whole does not consist of the elements arranged at random, but in a certain ratio and with some principle of composition/ἀλλὰ λόγῳ τινὶ καὶ συνθέσει, as Empedocles says in his description of bone", transl. Hett) and *Met.* 1014b36-39 (οἷον οἱ λέγοντες τὴν φύσιν εἶναι τὴν πρώτην σύνθεσιν, ἢ ὥσπερ Ἐμπεδοκλῆς λέγει). For an example of musical *harmonia* openly described as a specific form of *synthesis* (whose same elements, when variously combined, give a different result, i.e. a Dorian or Phrygian scale), see Arist. *Pol.* 1276b6-9: ὁμοίως δὲ καὶ πᾶσαν ἄλλην κοινωνίαν καὶ σύνθεσιν ἑτέραν, ἢν εἶδος ἕτερον ἢ τῆς συνθέσεως, οἷον ἀρμονίαν τῶν αὐτῶν φθόγγων ἑτέραν εἶναι λέγομεν, ἢν ὅτε μὲν ἢ Δωρίος ὅτε δὲ Φρύγιος.

13 E.g. Phil. fr. 6 K.-A., but also Heracl. frs 8, 10 and 51 Diels & Kranz; Emped. frs 23, 27 and 98 Diels & Kranz; Hipp. *De victu* 1.18. On this topic see Rocconi forthcoming.

of the letters first, others second, third and fourth, and so on”) and closely replicated some sentences later as far as the combination of intervals in melody is concerned:

ἀλλὰ πρὸς τὴν τῆς μελωδίας φύσιν πειρατέον βλέπειν κατανοεῖν τε προθυμούμενον τί μετὰ τί πέφυκεν ἢ φωνὴ διάστημα τιθέναι κατὰ μέλος. εἰ γὰρ μετὰ παρυπάτην καὶ λιχανὸν μὴ δυνατόν ἐγγυτέρω μελωδῆσαι φθόγγου μέσης, αὕτη ἂν εἴη μετὰ τὴν λιχανόν, εἴτε διπλάσιον εἴτε πολλαπλάσιον διάστημα ὀρίζει <τοῦ> παρυπάτης καὶ λιχανοῦ.

Aristox. *Harm.* 28.20-30 M = 36.14-37.1 DR

we must look for our evidence in the nature of melody, and try to concentrate on understanding *which interval the voice naturally and melodically places after which*. If after *parhypatē* and *lichanos* it is impossible to sing any note closer than *mesē*, then *mesē* will succeed *lichanos*, whether the interval which it bounds is twice or many times the size of that between *parhypatē* and *lichanos*.

Therefore, Aristoxenus' notion of *synthesis* in Books 1 and 2 of the *Elementa harmonica* is the basis for explaining the behaviour of any melody which is attuned (that is, for anticipating its potential movements),¹⁴ and this is preliminary to the specific contents of Book 3 where, through a set of demonstrations deriving from rules about melodic sequences, the author identifies the 'routes' (*hodoi*) that can be taken by the voice, in either direction, from a specific starting point within the Great Perfect System.¹⁵ In Aristoxenus' view, musical phenomena are as dynamic as any other natural process:¹⁶ it is

14 It is interesting to note that, with the introduction of the notion of *dynamis* in Book 2 of the *Elementa harmonica*, the occurrences of the term *synthesis* decrease.

15 Within the *Elementa harmonica*, instead, *symphōnia* is described as a form of *synthesis* only once (cf. 45.25-27 M = 56.13-15 DR: “this is a quality intrinsic and peculiar to the concord of the octave, for whether the concord added is smaller than it or equal or greater, the result of the combination is concordant [τὸ γιγνόμενον ἐκ τῆς συνθέσεως σύμφωνον γίγνεται]”), where we would normally expect to read the term *krasis* or *mixis*, as it happens in all the definitions of ‘consonance’ from Aristotle onwards, where the emphasis is always placed on the blending of two sounds (e.g. Arist. *Met.* 1043a10f.; [Eucl.] *Sect. Can.* 149.18-20 Jan; Cleon. *Is.* 187.19-21 Jan; Nicom. *Ench.* 262.1-5 Jan). The occurrence of *synthesis* in this passage refers, perhaps, to the possibility of dividing, for analytic purposes, the two notes of the *symphōnia*, as Aristoxenus seems to suggest when defining the incomposite intervals, cf. 60.15f. M = 75.14f. DR: πᾶν γὰρ τὸ σύνθετον ἔκ τινων μερῶν ἐστὶ σύνθετον εἰς ἄπτερ καὶ διαιρετόν.

16 Cf. Arist. *De part. an.* 646a12-16.

precisely because of this that their behaviour can be studied using scientific and objective criteria.

3 The Notion of *Synthesis* after Aristoxenus

As with many of Aristoxenus' other innovative intuitions and methodological issues, the dynamic concept of *synthesis* virtually disappeared in his epigones.¹⁷ Only Gaudentius refers twice to this notion in a harmonic context, coupling it with *taxis* (see, e.g., the hendiadys *synthesis te kai taxis tōn phthongōn* at *Is.* 336.24 Jan),¹⁸ while Bacchius relates it to rhythm (313.7 Jan),¹⁹ ascribing the expression to a certain Leophantus.

If we pay attention to other theoretical contexts, however, we realize that this term became increasingly important in later centuries, even providing a rhetorical work of the late first century BC with its title: *Περὶ συνθέσεως ὀνομάτων*, by Dionysius of Halicarnassus. In ancient Greece, terminological interactions between rhetorical and musicological thought had appeared since earlier times,²⁰ as later evidence in the Roman context still attests: *grammaticae quondam ac musice iunctae fuerunt* (Quint. *Inst. or.* 1.10.17). This relied on the fact that the orator's voice was considered his most important instrument for a successful and persuasive speech: Aristotle had explicitly highlighted the means through which, in rhetoric as well as in poetry, the voice may express the emotions that are more or less appropriate to the context (i.e. volume, melodic intonation and rhythm, cf. *Rhet.* 1403b30f.). Nevertheless, the term *synthesis* had been almost ignored by Aristotle and Theophrastus in their rhetorical works, which were mainly focused on the importance of the choice (*eklogē*) of words in speech.²¹

17 If we exclude the descriptive classification of intervals in *syntheta* and *asyntheta*, cf. Cleon. *Is.* 188.3-189.2 Jan. See also Cleon. *Is.* 199.13 Jan, where *synthesis* describes the (static) structure of conjunct and disjunct systems.

18 Cf. Gaud. *Is.* 345.17 Jan (*hē taxis kai hē synthesis*), talking about tetrachords.

19 For a similar definition of rhythm see Arist. Quint. *De mus.* 1.13, 31.8f. W-I.

20 Cf. [Demetr.] *De eloc.* 176, where the author quotes some adjectives (λείον, τράχύ, εὐπαγές, etc.), introduced by some non-identified *mousikoi*, in order to describe the 'musical' aspects of spoken language.

21 Dion. Hal. *De comp. verb.* 2.7: "whereas the choice of words has been the subject of many serious investigations, which have caused much discussion among philosophers and men of state, composition, though it holds second place in order, and has been the subject of far less discussion than the other". Cf. Dion. Hal. *Isoc.* 3: "there are altogether three means, according to Theophrastus, by which grandeur, dignity and impressiveness are achieved:

When the core of this theorisation process moved to Rome, the first figures who theoretically speculated on public deliveries were the professional orator Cicero (*Orator, De oratore*)²² and the Greek teacher of rhetoric Dionysius of Halicarnassus (defined *sophistēs* and *mousikos* by the *Suda* [δ 1171 A.]), who was active in Rome from 30 BC onwards and author of several essays on the literary style of Greek orators and historians.

From the very beginning of his treatise *On Literary Composition*,²³ Dionysius breaks with previous tradition attributing a central role to *synthesis*, even comparing it to the role of goddess Athena in the *Odyssey*.²⁴

εἰς δὴ τοῦτο τὸ μέρος, ὃ δεῖ πρῶτον νέοις ἀσκεῖσθαι, ‘συμβάλλομαί σοι μέλος εἰς ἔρωτα’ τὴν περὶ τῆς συνθέσεως τῶν ὀνομάτων πραγματεῖαν ὀλίγοις μὲν ἐπὶ νοῦν ἐλθοῦσαν, ὅσοι τῶν ἀρχαίων ῥητορικὰς ἢ διαλεκτικὰς συνέγραψαν τέχνας, οὐδενὶ δ’ ἀκριβῶς οὐδ’ ἀποχρῶντως μέχρι τοῦ παρόντος ἐξειργασμένην, ὡς ἐγὼ πείθομαι.

Dion. Hal. *De comp. verb.* 1.9²⁵

So it is to supply this latter faculty, the first to which the young should apply themselves, that “for the sake of love I offer you a song”, in the form of this work *on literary composition*. It is a subject which has occurred to only a few of those ancient writers who have composed handbooks of rhetoric or dialectic, and no one, to the best of my belief, has carried out a detailed, or even an adequate study of it up to the present day.

After announcing that he will treat “what the nature (*physis*) of composition is”, as well as what are its special effects, aims, varieties, and so on (1.12f.), in ch. 2 he defines *synthesis* as “a certain process of arranging the parts of speech,

the choice of words, their melodious arrangement and the figures of speech in which they are set”.

22 For a preliminary treatment of *compositio* see Cic. *Orat.* 149 (transl. Hubbell): “the arrangement of words in the sentence has three ends in view: (1) that final syllables may fit the following initial syllables as neatly as possible, and that the words may have the most agreeable sounds; (2) that the very form and symmetry of the words may produce their own rounded period; (3) that the period may have an appropriate rhythmical cadence”.

23 This is a late work in Dionysius’ life, whose composition may be approximately dated between the first and the second part of the treatise *On the Style of Demosthenes*.

24 *De comp. verb.* 4.12: “one would not be wrong to compare composition to Athene in Homer: for she used to make the same Odysseus appear in different forms at different times”. Pohl (1968, 94) had already suggested the idea that Dionysius’ theory of *synthesis* could be traced back to the Peripatetic environment, more precisely to Theophrastus.

25 Cf. *De comp. verb.* 4.18.

or the elements (στοιχεῖα) of diction" (2.1), pointing out that composition comes after word choice, but only in order of tasks, while its potentialities are prior in potency (2.8: αἱ συνθετικαὶ δυνάμεις τῇ μὲν τάξει δεύτεραι τῶν ἐκλεκτικῶν εἰσι, τῇ δὲ δυνάμει πρότεραι).

Synthesis, Dionysius adds, has the task of properly 'harmonising' the elements of the language (3.4).²⁶ Due to this, it is not only a more important (κρεῖττον) and effectual (τελειότερον) object of study than is the mere selection of words (3.5), but also the most immediate cause of their beauty (3.12).²⁷ Indeed, if only the arrangement of the words is altered, the structure, the complexion, the character, the feeling and the general effectiveness of the lines change (4.5), and the same happens in prose (4.7). Also the ancient poets, historians, philosophers and orators—realizing that neither words, nor clauses, nor periods should be put together at random—had a definite system of rules (τέχνη δέ τις ... καὶ θεωρήματα) that helped them to compose well (συνετίθεσαν εὖ) (5.12). Finally, in ch. 6, Dionysius tells his readers the three main goals that the *synthetikē epistēmē* (i.e. a 'science')²⁸ must fulfil:

δοκεῖ μοι τῆς συνθετικῆς ἐπιστήμης τρία ἔργα εἶναι· ἐν μὲν ἰδεῖν, τί μετὰ τίνος ἀρμοζόμενον πέφυκε καλὴν καὶ ἡδεῖαν λήψεσθαι συζυγίαν· ἕτερον δὲ γινῶναι τῶν ἀρμόττεσθαι μελλόντων πρὸς ἄλληλα πῶς ἂν ἕκαστον σχηματισθὲν κρεῖττονα ποιήσῃ φαινέσθαι τὴν ἀρμονίαν· τρίτον δ' εἴ τι δέεται μετασκευῆς τῶν λαμβανομένων, ἀφαιρέσεως λέγω καὶ προσθήκης καὶ ἀλλοιώσεως, γινῶναι τε καὶ πρὸς τὴν μέλλουσαν χρεῖαν οἰκείως ἐξεργάσασθαι.

Dion. Hal. *De comp. verb.* 6.1

I consider that the science of composition has three functions. The first is to observe which combinations are naturally likely to produce a beautiful and attractive united effect; the second is to judge how each of the parts which are to be fitted together should be shaped so as to improve the harmonious appearance of the whole; the third is to judge whether

26 *De comp. verb.* 3.3f.: "it may well be thought that composition bears the same relation to selection as words do to ideas: for just as fine thought is of no use unless one invests it with beautiful language, so here too it is pointless to devise pure and elegant expression unless one adorns it with the proper arrangement (εἰ μὴ καὶ κόσμον αὐτῇ τις ἀρμονίας τὸν προσήκοντα περιθήσει)".

27 *De comp. verb.* 3.12: "what alternative, therefore, is left but to attribute the beauty of the style to the composition?". Cf. also *ibid.* 3.18: "one may conclude that the appealing quality of his style is derived, after all, not from the beauty of the words but from their combination".

28 Hence presenting his account more than a pure *technē*.

any modification is required in the material used—I mean subtraction, addition or alteration—and to carry out such changes with a proper view to their future purpose.²⁹

Immediately after this passage is the famous analogy with architecture comparing the construction of a speech to that of a building (6.2f.): “the effect of each of these processes I shall explain more clearly by means of analogies drawn from the productive arts which are familiar to all—house-building, ship-building and the like”. This comparison has a particular significance in showing how any composition that is put together from items (συντίθησιν ἐκ τούτων) implies a harmonization (ἀρμόσαι), which plays a pivotal role in assembling the parts together effectively (6.4: εἰ συνθήσειν).

Now, even if we read no further than these preliminary chapters of the treatise, it is clear how Dionysius’ reasoning about *synthesis* is peculiar and has more than one debt to Aristoxenian thought:

- The treatment of the topic is presented as a science (*epistēmē*) somehow musical (*mousikē ... tis*, 11.13),³⁰ which can be divided into different parts (cf. Aristox. *Harm.* 1.11–16 M = 5.4–6 DR: “the science concerned with melody has many parts and is divided into several species, of which the study called Harmonics must be considered one”). One of them is concerned with the primary elements (*stoicheia*): “this, then, is one aspect of the science of composition, the one which is concerned with the primary parts and elements of speech. The other, as I said at the beginning, is concerned with what are called clauses” (*De comp. verb.* 7.1, cf. *Harm.* 1.20 M = 5.8 DR: “harmonics ... is the study of first principles”).³¹ Later in Dionysius’ text (ch. 14), there is an explicit reference to Aristoxenus which, if extended to the whole passage, suggests not only that Aristoxenus had catalogued the minimum elements of the *lexis* (perhaps in a work on metrics to which he seems to refer to in *Harm.* 32.7 M = 41.11 DR, cf. *ibid.* 39.16 M = 49.9 DR), but also that his inquiry might have influenced Dionysius methodologically:

τῶν δὴ στοιχείων τε καὶ γραμμάτων οὐ μία πάντων φύσις, διαφορὰ δὲ αὐτῶν πρώτη μὲν, ὡς Ἀριστόξενος ὁ μουσικὸς ἀποφαίνεται, καθ’ ἣν τὰ μὲν φωνὰς ἀποτελεῖ, τὰ δὲ ψόφους· φωνὰς μὲν τὰ λεγόμενα φωνήεντα, ψόφους δὲ τὰ λοιπὰ

29 Cf. *De comp. verb.* 9.10: “and this very question—when periods should be used and to what extent, and when not—is one of particular relevance to the science of composition”.

30 *De comp. verb.* 11.13: “for the science of civil oratory is, after all, a kind of musical science, differing from vocal and instrumental music in degree, not in kind”.

31 Reading with Macran τῶν πρώτων θεωρητικῇ.

πάντα. δευτέρα δὲ καθ' ἣν τῶν μὴ φωνηέντων ἃ μὲν καθ' ἑαυτὰ ψόφους ὁποίους δὴ τινὰς ἀποτελεῖν πέφυκε, ῥοῖζον ἢ σιγμὸν ἢ μυγμὸν ἢ τοιούτων τινῶν ἄλλων ἤχων δηλωτικούς· ἃ δ' ἐστὶν ἀπάσης ἁμοιρα φωνῆς καὶ ψόφου καὶ οὐχ οἷά τε ἡχεῖσθαι καθ' ἑαυτά· διὸ δὴ ταῦτα μὲν ἄφωνα τινὲς ἐκάλεσαν, θάτερα δὲ ἡμίφωνα. οἱ δὲ τριχῇ νείμαντες τὰς πρώτας τε καὶ στοιχειώδεις τῆς φωνῆς δυνάμεις φωνήεντα μὲν ἐκάλεσαν, ὅσα καὶ καθ' ἑαυτὰ φωνεῖται καὶ μεθ' ἑτέρων καὶ ἔστιν αὐτοτελὴ· ἡμίφωνα δ' ὅσα μετὰ μὲν φωνηέντων αὐτὰ ἑαυτῶν κρεῖττον ἐκφέρεται, καθ' ἑαυτὰ δὲ χεῖρον καὶ οὐκ αὐτοτελῶς· ἄφωνα δ' ὅσα οὔτε τὰς τελείας οὔτε τὰς ἡμιτελεῖς φωνὰς ἔχει καθ' ἑαυτά, μεθ' ἑτέρων δ' ἐκφωνεῖται.

Dion. Hal. *De comp. verb.* 14.2-4

The elements and the letters are not of the same nature. The first of the differences between them, *as the musical theorist Aristoxenus indicates*, is that some represent vocal sounds, and others noises: the former being those which are called 'vowels', the latter being all the other letters. A second difference is that some of the non-vowels by their own nature produce some kind of sound—a whirring, a hissing, a murmur, or suggestions of other sounds of these kinds; while others are devoid of any voice or sound and cannot be sounded by themselves. Consequently some theorists have called the latter 'voiceless' and the others 'semi-voiced'. Those who divide *the primary and elementary powers of the voice*³² into three give the name 'vowels' to all the letters which can be made to produce sound on their own or together with others, and are self-sufficient; 'semivowels' to all which are pronounced more effectively in combination with vowels, worse and imperfectly on their own; 'voiceless' to all which have no sound on their own, whether perfect or imperfect, but are pronounced in combination with others.

- *Synthesis* is the most important part of the science of composition (*De comp. verb.* 3.5, cf. Aristox. *Harm.* 18.24-29 M = 23.21-24.1 DR); nobody had adequately treated it before (*De comp. verb.* 1.9 and 4.18; cf. Aristox. *Harm.* 2.7-11 M = 6.6-9 DR, 5.6f. = 9.15f. DR, and *passim*); its task is to harmonize the parts in the whole (*De comp. verb.* 6.1; cf. Aristox. *Harm.* 27.29-32 M = 35.17-20 DR) and it is especially thanks to it that we obtain a beautiful and pleasant result (*De comp. verb.* 3.2, 3.18).

32 Cf. Aristox. *Harm.* 1.19 M = 5.7 DR, where we are told that harmonics has a *dynamis stoicheiōdē*, i.e., that its goal is to study the elements of the discipline: τὴν ἀρμονικὴν ... ἔχουσάν τε δυνάμιν στοιχειώδη.

- *Synthesis* adds order and removes randomness (*De comp. verb.* 5.12, cf. Aristox. *Harm.* 5.24-27 = 10.4-7 DR). Such an order, for Dionysius, is artistically constructed (unlike the order of the harmonized melody); nevertheless, its effect should be ‘naturally’ produced (that is, when put together, the parts of the speech must follow nature as much as possible:³³ Dion. Hal. *De comp. verb.* 1.13 and 6.1, *De Dem. dict.* 33.202.18, *De Thuc.* 11.341ff.;³⁴ cf., e.g., Aristox. *Harm.* 27.28-32 M = 35.16-20 DR and 28.20-22 M = 36.14-16 DR) and ‘naturally’ perceived, by virtue of the instinctive inclination of human beings to feel and appreciate tuneful melody and good rhythm (see *De comp. verb.* 11.8); moreover, its nature is the first topic to be investigated (*De comp. verb.* 1.12; cf. Aristox. *Harm.* 4.9-12 M = 8.11-14 DR).
- *Synthesis* has ‘potentialities’, i.e., it has a dynamic character (*De comp. verb.* 2.8; cf. Aristox. *Harm.* 19.9 M = 24.9 DR).
- Finally, the similarity of Dionysius’ architectural analogies with Vitruvius’ *De architectura*, already identified by other scholars, may not only be explained on a synchronic level (the two authors were contemporaries); it could also be reduced to a common source (both explicitly relied on Aristoxenus for describing a proportional and harmonious construction).³⁵

Aristoxenus’ influence on Dionysius might be easily justified by the possibility that Dionysius had access to his works: in 86 BC, Aristotle’s library had been brought from Athens to Rome by Sulla (with the works of his pupil Theophrastus and, perhaps, Aristoxenus too), where it had attracted the attention of some contemporary bibliophiles, like the grammarian Tyrannion and Andronicus of Rhodes, traditionally credited with the production of the first edition or catalogue of Aristotle’s works.³⁶ This could explain also other Dionysian borrowings from Aristoxenus, already noticed by the scholars, such as the famous description of the difference between the melody of spoken language and musical melody (Dion. Hal. *De comp. verb.* 11.15-21; cf. Aristox. *Harm.* 8.14-10.21 M = 13.7-15.12 DR) and the identification of the minimum rhythmical

33 Cf. Long. *De subl.* 22.1 (“for art is only perfect when it looks like nature and Nature succeeds only when she conceals latent art.”) and Quint. 9.4.23-25 (*est et alius naturalis ordo*).

34 Even if a natural word order is not the only acceptable guide in composition. According to Schenkeveld (1983, 94), Dionysius’ “views on natural word order and agreement corresponds on many points with those of Apollonius Dyscolus, and are probably of Stoic origin”.

35 On the numerous similarities between architectural and musical vocabulary and on Vitruvius’ explicit borrowings from Aristoxenus’ music theory, see Walden 2014.

36 See Porph. *Vit. Plot.* 24 (which, however, does not mention Aristoxenus): “Andronicus divided the works of Aristotle and Theophrastus into treatises, collecting related material into the same place”.

pattern with the ratio of two to one, for which Aristoxenus is explicitly mentioned (Dion. Hal. *Dem.* 48; cf. Aristox. *Rhythm.* 2.31).³⁷

After Dionysius, the reverberation of this influence of the Aristoxenian model of *synthesis* on rhetorical writings did not end. Let us consider, e.g., a peculiar expression used by Aelius Theon in his *Progymnasmata* (the earliest surviving work on exercises in composition and probably written during the first century AD).³⁸ Here the same participle (*hērmosmenon*) used by Aristoxenus to indicate that the musicality of *melos* is applied to *synthesis*, which becomes *hērmosmenē* (“harmonized”):

ἀλλ' ὥσπερ τοῖς ζωγραφεῖν βουλομένοις οὐδὲν ὄφελος κατανοεῖν τά τε Ἀπελλοῦ καὶ Πρωτογένοῦς καὶ Ἀντιφίλου ἔργα, ἐὰν μὴ καὶ αὐτοὶ γράφειν ἐπιχειρῶσιν, οὕτω καὶ τοῖς ῥητορεύειν μέλλουσιν οὔτε τῶν πρεσβυτέρων οἱ λόγοι, οὔτε τῶν διανοημάτων τὸ πλήθος, οὔτε τὸ περὶ τὴν λέξιν καθαρὸν, οὔτε σύνθεσις ἡρμωσμένη, οὔτε ἀκρόασις ἀστεία, οὔτε ὅλως τῶν ἐν τῇ ῥητορικῇ καλῶν οὐδὲν ἐστὶ χρήσιμον, ἐὰν μὴ καὶ αὐτὸς ἕκαστος ταῖς καθ' ἑκάστην ἡμέραν γραφαῖς ἐγγυμνάζεται.

Ael. Theon *Prog.* 62³⁹

But just as it is not help to those wanting to paint to look at the works of Apelles and Protogenes and Antiphilus unless they themselves put their hand to painting, so neither the words of older writers nor the multitude of their thoughts nor their purity of language nor *harmonious composition* nor urbanity of sound nor, in a word, any of the beauties in rhetoric, are useful to those who are going to engage in rhetoric unless each student exercises himself every day in writing.

In conclusion, this brief excursus on the notion of *synthesis* in Greek theoretical texts is a good example of how, in ancient times, the permeability between musical and rhetorical theories occurred not only on a terminological but also on a deeper conceptual level, being much more widespread than often thought. The influence of Greek harmonic science on the scientific and cultural speculations of Hellenistic and Roman times goes well beyond the technical aspects

37 Dion. Hal. *Dem.* 48: “time develops into rhythm. This is first constituted either from two short syllables, according to some, who call the rhythm thus produced the ‘leading’ rhythm, because it has the first ratio of times that is equal in rise and fall; or from three shorts, as Aristoxenus and his school held, which is the first rhythm composed in the ratio of two to one”.

38 Kennedy 2003.

39 Transl. Kennedy.

of harmonic discipline, affecting not only the strictly mathematical disciplines (i.e. the disciplines of the forthcoming quadrivium), but all of the seven liberal arts.

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Narratives in Motion: the Art of Dancing Stories in Antiquity and Beyond

Report on an Interdisciplinary Symposium with Scholars and Performers

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Abstract

The purpose of the symposium “Narratives in Motion. The Art of Dancing Stories in Antiquity and Beyond” was to make original contributions to the thriving field of study on ancient Greek and Roman dance by tackling this issue from an angle which is both specific in that it narrows down the focus on dance narrativity across different performance genres, and inclusive in that it encompasses transcultural, transhistorical and practice-based approaches. With eleven talks by classical and dance scholars and two performances by dance artists, the symposium was able to shed light on a range of practices, genres and cultural aspects relating to narrative dance in the ancient and, to a lesser degree, modern world. The event took place on 22-23 June 2018 at the Department of Classics of the University of Vienna, and was sponsored by the FWF-Austrian Science Fund (Project V442-G25 “Aischylos’ diegetisches Drama”).

Keywords

Greek and Roman dance culture – choral dance, pantomime – narrative dance – intermedial and multimodal narratology – dance reenactment – practice-based research on ancient dance

1 Introduction

What motivated me to organize the symposium “Narratives in Motion. The Art of Dancing Stories in Antiquity and Beyond” was the detection of a research void concerning intermedial and multimodal narrative practices in Greek

and Roman performance culture, and especially narrative uses of dance and music.¹ The symposium centred on dance narrativity, that is, on the performance genres, cultural contexts and artistic challenges involved with dancing stories from the archaic until the late antique period. The focus on dance narrativity was also intended to further bridge the gap, which still exists in classical scholarship, between specialists in Greek chorality and specialists in imperial pantomime.

Throughout Greek and Roman antiquity, dance was a key medium for narrating countless stories and myths, alone or in combination with other media. Descriptions of ancient narrative dances punctuate Greek and Latin literature; for example in Xenophon (*Anabasis* 6.1.8-10, *Symposium* 9.4-7), Lucian (*On Dancing* 63), Longus (2.36.1-3), Apuleius (*Metamorphoses* 10.29-33), and Nonnus of Panopolis (*Dionysiaka* 19.136-299). Such descriptions are enlightening in that they document, on the one hand, the complexity of the plots danced, which feature many characters, abound in turning points, and also include abstract (i.e. disembodied) elements, and on the other hand the strong emotional responses which narrative dances elicited from the mesmerised spectator-narratees (by which I mean an audience who are told a narrative by means of dance).

At the same time, such descriptions are only the tip of the iceberg. From the archaic until the end of the late antique period, a wide range of performing arts resorted to dance to add power to storytelling. For example, choral poets such as Alcman, Stesichorus,² Pindar and Bacchylides composed poems full of mythical stories and also choreographed them beautifully. Attic tragedy too was fond of narratives, recounted not only by messengers but also by dancing choruses: Phrynicus and Aeschylus, for instance, as successful ‘teachers of choruses’ (*chorodidaskaloi*), were praised for creating many dances—“as many ... as waves on the sea in a storm”³—which remained memorable for generations (cf. Aristophanes’ *Frogs*). Again, from the imperial period until the end of late antiquity solo pantomimes transposed the mythical repertoire into new kinetic vocabularies, relying very little on verbal language and leaving dance virtually alone and in charge of the storytelling.

Since dance narrativity is still a subject comparatively little studied, not only in the Classics, but also in fields such as Dance Studies and intermedial

1 Cf. Gianvittorio 2012.

2 Finglass 2017.

3 Phrynicus *TrGF* 3 T 13.

narratology,⁴ it was crucial to shed light on it from different perspectives and with different methodologies. To this end, the thematic sections of the conference deliberately juxtaposed contributions from the Classics with transhistorical, cross-cultural and practice-based approaches from the broader field of Dance Studies. On the transhistorical side, the symposium privileged contributions dealing with the reception and vibrant afterlife of ancient Greek and Roman narrative dance from the 18th century until today. On the cross-cultural side, the focus lay on Indian and South-Asian dance traditions, because comparisons with them are—not without reason—especially frequent in studies of ancient pantomime. Finally, the notion—widespread in today's re-enactment studies⁵—that re-performance, and historically informed performances in particular, can engender alternative and productive forms of scholarship, provided an additional reason to welcome practice-based approaches exemplifying the multiform engagement of today's dance and theatre artists with Greek and Roman dance. An interdisciplinary format of this kind proved to be quite stimulating: it not only facilitated the transfer of theoretical and methodological insights across disciplines which have seldom interacted thus far, but also, at a more fundamental level, it helped those present to conceive of (ancient) dance narrativity as a research topic on its own.

The papers and performances were arranged into four thematic sections: 1) Dance as a medium for narrative, 2) Pantomime and its legacy, 3) Interplay of content and form, and 4) On stage. Each section tackled its own issue by comprising contributions from the fields of Classics and of Dance Studies in order to encourage transhistorical and transcultural comparisons and to enhance interdisciplinary exchange. What follows will summarise the main outcomes of each section by relying on the materials submitted by the participants and on my notes and pictures from the symposium.

2 Dance as a Medium for Narrative

The opening section sought to underpin the issue of dance narrativity theoretically, i.e. to understand better what enables dance not only to transpose complex narratives from other (usually language-based) media, but also, on occasion, to empower them. Though present in other contributions as well,

4 For exceptions see Royce 1984, Foster 1996 and 2005, Mackrell 1997, Brandstetter 2001, Thurner 2007 and 2017; on ancient dance narrativity see Schlappbach 2009, Gianvittorio 2016 and 2019, Weiss 2018.

5 E.g. Franko 2018; Dorf 2019.

theoretical and methodological reflection on this subject was central to two papers in particular which examined case studies from the imperial period (Schlapbach) and from the 18th till the 21st century (Bührle).

In *Making Sense in Dance*, Karin Schlapbach (Université de Fribourg, Philologie Classique) addressed first the notion of narrative dance itself. She pointed out that we probably depart from the Platonic distinction between drama (1st person) and narration (3rd person) when we call dance practices involving impersonation 'narrative'. This term seems to privilege the plotline over the dancer-impersonator and is in itself revealing of how little we know about how exactly dancers tell stories. The bulk of the paper explored possible connections between non-representational forms of expression in dance and the construction of a narrative through dance. Expanding on her recent monograph⁶ and discussing texts from the imperial and Christian periods (e.g. *Acts of John*), Schlapbach argued that, just at the time when the eminently narrative genre of pantomime dominated the stages, a strong interest in non-representational dance emerged in literary sources, especially novels; such texts linger on how virtuoso and acrobatic dancers would emotionally engage the spectators, awakening their desire and sense of wonder. According to Schlapbach, this circumstance points to the ancients' awareness that non-narrative dance elements with a strong emotional impact on the spectators could be turned into tools for narrative dancing, which helped the spectator-narratees to better grasp complex or elusive contents by prodding them into embodied cognition.

While taking a different approach, Julia I. Bührle (University of Oxford, Faculty of English) enquired about the potential of dance to narrate stories with tools of its own—and she too could rely in this task on an important monograph.⁷ With her talk on *Generic Transformations: Dancing Shakespeare from the 18th Century to the Present*, Bührle posed fundamental questions about the supposed conditions and staged experiments of transposing narratives from drama into libretti and from libretti into dance, and paid special attention to the intermedial and transgeneric aspects involved. From this perspective, she examined several ballets based on Shakespeare's plays in the past three centuries, analysed the criteria according to which certain plots have been regarded as more suitable for ballet than others, and considered the significant changes made by librettists and choreographers in the face of artistic, political, and financial factors. This allowed her to explore an impressive range of choreographic strategies developed to transpose Shakespeare's plots from page to stage, and to compare different ballet versions of the same play (e.g. *Romeo*

6 Schlapbach 2018.

7 Bührle 2014.

and *Juliet* in the versions of John Cranko and of Rudolf Nureyev). Remarkably, Bührlé thus elucidated transposition and adaptation processes which are also relevant to ancient narrative dance, whose plots were often adapted from different media and genres (e.g. from epics into tragedy and from tragedy into pantomime).

3 Pantomime and Its Legacy

A section of the symposium was devoted to ancient pantomime and included insights into pantomime's legacy in the ballet reforms of the 18th century. A section on pantomime was necessary, not only given the huge popularity which this genre enjoyed from the imperial until the end of the late antique period, but also because of the comparatively recent surge of interest in it: over the past two decades, Graeco-Roman pantomime has been analysed in its religious, economical, semiotic and literary aspects, which together shed light on the dance culture of which this genre was part and parcel.⁸

In this context, the ties linking imperial pantomime and the rhetorical discourses of the Second Sophistic have been repeatedly pointed out.⁹ Marie-Hélène Garelli (Université Toulouse 11, Langues et littératures anciennes) offered new insights into them with a talk on *The Emotional, Cultural and Social Role of Narrative Dancing in the Representation of Graeco-Roman Pantomime*. This explored overlapping areas in ancient discourses about pantomime and about rhetoric, especially lingering on their points of contact at the terminological, gestural and cultural level. For example, Garelli pointed out how pantomimic performances were expected to showcase attributes which were also key to the narrative sections of ancient orations and oratorical exercises (*progymnasmata* / *praeexercitamina*), and how the plot of pantomime dances and the narrative section of orations were actually called the same, namely *διήγημα* (or more seldom *ἱστορία*) in Greek and *narratio* in Latin. Libanius (*On Behalf of the Dancers* 112) may well be exaggerating when, in holding that a god “introduced dance as a form of instruction for the masses in the deeds of the ancients”, he adds that “now a goldsmith will converse not badly with someone from the schools about the houses of Priam and Laius”, yet the stories danced by pantomimes, just like those told by orators, ultimately served the double purpose of entertaining and of educating large audiences.

⁸ Pantomime has been the subject of a number of recent studies, also authored by the participants in our symposium: e.g. Garelli 2007, Webb 2008, Schlapbach 2018.

⁹ E.g. Garelli 2007, Lada-Richards 2007, Schlapbach 2008.

The active role and the education of the spectator-narratees who were to make sense of pantomimes were also central in the contribution offered by Ruth Webb (Université Lille 3, Département langues et cultures antiques), entitled *Narrative, Action, and the Role of the Audience in Ancient Pantomime*. Webb's emphasis was on the rendering of multi-character narratives through pantomime. She particularly considered ancient discourses about kinesthetic skills and techniques which allow the solo dancer not only to transform himself or herself from one character into another in full view of the spectators (e.g. Lucian *On Dance* 67, *Planudean Anthology* 289), but also, and more sophisticatedly, to allude to one character while actually impersonating another (cf. Libanius *On Behalf of the Dancers* 113-14). As to this last point, to exemplify possible renderings of multi-layered characterization, Webb called attention to Kathak dancers who portray one character (e.g. Gopi) as being in the act of thinking of another (e.g. Krishna). Here as on other occasions, the interdisciplinary format of the symposium offered a valuable opportunity to discuss comparisons between ancient pantomime and Indian dance with experts of both subjects. Webb too (cf. Garelli) remarked on the educational value of pantomime, though from a different angle: since the dancer's impersonation of, transformation into, and allusion to different characters constantly needed to be interpreted by perceptive spectators, reading through dance sharpened their minds—as Libanius claims, better than solving riddles.

Karin Fenböck (Universität Salzburg, Fachbereich Kunst-, Musik- und Tanzwissenschaft) added transhistorical depth to discussions of pantomime and of pantomimic renderings of plot and characters with a contribution on *Gesture as a Means of Portraying Characters in Viennese Mid-Eighteenth Century Ballet*. This was an investigation of how, during their productive stays in Vienna, the choreographers Hilverding (1710-1768), Angiolini (1731-1803), and Noverre (1727-1810) conceptualized and used pantomime-like gestures, attitudes and frozen poses to stage their characters and stories (which, by the way, were often inspired by classical mythology). By the mid-18th century, baroque displays of symmetry and synchronized movement had turned out to be unsatisfactory, and enlightened ballet masters choose to look not only at drama but also at ancient pantomime to revitalise dance. Increasingly complex plots began to be staged, and gestural renderings of characters—that is, the characters' actions, inner life and mutual interactions—became key to ballet. In this context, forerunners and pioneers of *ballet d'action* re-read ancient sources on dance (especially Lucian's *On Dance*) with a keen interest, regarding them as inspirational for the training of dancer-actors and for creating kinesthetic vocabularies in which the dance-encoded meanings were not only varied and detailed enough for dramatic purposes, but also clear-cut and, supposedly, immediately

understandable to the spectators. Their notions of ancient dance were to profoundly influence later theories and practices of narrative ballet.

The theoretical, historical and transhistorical reflection on pantomime was rounded off by the performance given by professional dancer Emily May, alumna of Trinity Laban Conservatoire of Music and Dance (London) and network member of the project Ancient Dance in Modern Dancers (TORCH-The Oxford Research Centre in the Humanities, University of Oxford), which researches kinesthetic engagement with ancient literary and iconographic sources by reenacting *tragoedia saltata*. In 2017, inspired by her collaboration with the classical scholars of ADMD and by the study of ancient works of art representing body movement at the Ashmolean Museum, May choreographed the solo *Deluge*, based on the flood narrative of Ovid's *Metamorphoses*. At the symposium, May introduced her own methods, explaining in particular how wearing a blank mask had influenced her proprioception and body movements in unexpected ways, and eventually re-danced *Deluge* masked and bare-footed (Figure 1). *Deluge* constantly interacts with ancient iconographic



FIGURE 1 Emily May dances *Deluge* in the Library of Classics of the University of Vienna on June 22, 2018

PHOTOGRAPH BY THE AUTHOR

documents without attempting to conceal numerous elements from contemporary dance. It literally held up before our eyes the spell and aesthetic appeal of danced narratives as well as the challenge of encoding complex narratives in dance. It was exciting to witness the means by which May rendered abstract and disembodied aspects of Ovid's narrative and how she experimented with pantomime-like hand gestures, for example to mark the points at which the dancer's impersonation switches from one character to another (cf. Webb). For scholars familiar with the texts danced and with ancient sources about dance, experiencing performances such as May's and, later, Gilliam's as spectators almost inevitably calls to mind specific passages and elicits a richer (and more embodied) understanding of them.

4 Interplay of Content and Form

Relying on the notion, first popularized by M. McLuhan and generally unquestioned in today's media studies,¹⁰ that media tend to inform messages instead of conveying them neutrally, the third section of our symposium considered the mutual influences and coalescences between narrative contents and dance forms. While Julia I. Bührle, in considering the transposition of Shakespeare's plots into libretti and into ballet, had already provided good examples of this phenomenon, this section was to look more closely at samples of its manifestations to better understand how narrative contents and dance forms actually interacted and merged across different practices of ancient dance. Relevant questions included, for example: How would certain narratives and characters pave the way to the related choreographic renderings (Peponi)? What exactly made ancient dance 'mimetic', i.e. apt to represent specific plot events and characters (Bocksberger)? And what happens when ancient narratives are translated into non-emic dance vocabularies (Zarifi-Sistovari)?

We plunged into the issue with a talk on *Narratives of Desire and the Missing Pas de Deux*, offered by Anastasia-Erasmia Peponi (University of Stanford, Department of Classics). Peponi compared archaeological sources and literary narratives representing eroticism, privileging for the literary sources those which were either directly concerned with dance or otherwise put emphasis on body and movement. For example, she juxtaposed narratives about Boreas' abduction of Oreithyia (cf. Lucian *On Dance* 40) with a number of vase paintings and bas-reliefs (including the Nesebar Hydria found in 2010) depicting this or similar erotic narratives featuring a woman's abduction. Thanks to this

¹⁰ See e.g. Doloughan 2011.

multi-medial reading, Peponi could not only enlighten overt and covert kinesthetic aspects of the texts considered, but also argue that choral and solo dance (the two prevailing dance registers of Greek and Roman antiquity) could sideline practices of duet dancing or ancient versions of *pas de deux* to better fit erotic narratives. Indeed, the trans-historical comparison between ancient iconographic renderings of heterosexual eroticism and modern *pas de deux* of loving pairs showed unexpected similarities—not necessarily in actual poses and steps but in the exploitation of body language to represent the lovers' feelings, intentions and mutual relationship.¹¹

The contribution of Sophie M. Bocksberger (University of Oxford, Department of Classics), entitled *Pure Dance and Narrative Dance in Xenophon's Symposium*, continued the examination of lovers' duets in ancient dance and of the relationships between representational and non-representational dance (cf. Schlapbach). Of the three dance performances described in Xenophon's *Symposium*, two appear to be non-narrative, while the third vividly enacts the love story of Dionysus and Ariadne. On the basis of these and other passages from Xenophon, Aristoxenus and Aristophanes, Bocksberger re-thought the much-debated notions of *φορὰ* and *σχῆμα* to argue that while *φορὰ* connoted the dance step or pose in a general and abstract fashion, *σχῆμα* usually referred to practices of mimetic dance and character impersonation which required the actor-dancer to adjust his or her own body, bearing and movements to those of the character. This impersonation-based understanding of *σχῆμα* emphasized the quintessentially dramatic quality of ancient dance and was illustrated with striking examples from modern ballet. To mention just one example, Bocksberger looked at the *σχῆμα* of the rooster dance by Phrynichus (described in Aristophanes' *Wasps*) from an intriguingly new perspective after considering ballet renderings of chickens' movements, such as the chicken dance in Frederick Ashton's *La Fille Mal Gardée*.

The advantages of combining practice-based and scholarly approaches in the study of ancient narrative dance were fully exploited by Yana Zarifi-Sistovari, artistic co-director (with M.J. Coldiron) of Thiasos Theatre Company, which for decades now has staged Greek plays to the delight of audiences and critics alike, and honorary member of the APGRD at the University of Oxford. The lecture-demonstration *Synergies—A Cross-Cultural Approach* gave valuable insights into the artistic and research goals and methods of Thiasos

11 An expanded version of Peponi's contribution will be published as a chapter of her book in progress *Dance and Aesthetic Perception in the Greek and Graeco-Roman World*.

and also, with the help of Shelby L. Gilliam, actual demonstrations drawn from the 2018 staging of Euripides' *Bacchae*. As explained by Zarifi-Sistovari, Thiasos reinterprets Greek theatre dance by borrowing performance vocabularies from Indian Bharatanatyam, Indonesian Jaipongan¹² and others. On the one hand, such performance traditions offer living examples of the culturally motivated combination of mask, song, dance and drama, and on the other their rich dance and gestural repertoires allow us to transpose almost literally the contents and meanings of Greek tragic songs. Far from being dictated by a taste for pure eclecticism, the fusion of Indian, Indonesian and ancient Greek elements relies on cultural analogies and on a larger dance-based translation project (translation of poems into dance, of different dance vocabularies into one another, etc.). Two striking examples of this ambitious work were shown in video footage and critically discussed, namely an excerpt from Euripides' *Medea* performed by Bharatanatyam dancer Ash Mukherjee, and parts of choral odes from Euripides' *Hippolytos* set to Jaipongan.

5 On Stage

Effectively introduced by Zarifi-Sistovari, the fourth and final section of the symposium lingered on narrative dances choreographed for theatrical stages, i.e. having specific plays, plots and characters in mind. Again, cross-cultural comparisons with classical (Ganser) and modern (Purkayastha) Indian dance were privileged because they seem particularly apt to bridge our cultural distance from ancient narrative dance.

Attic tragedy was a natural starting point here. In *Imagining the Suppliants: Stage Directions and Choral Formations*, Nicole Heitzinger (Universität Salzburg, Fachbereich Kunst-, Musik- und Tanzwissenschaft) searched the text of Aeschylus' *Suppliants* for information not only about stage movements, as in the case of the choral dances by the altars and statues of the gods, but also about imagined movements, as in the case of the narratives recapitulating the offstage wanderings of the chorus and of their ancestor Io. Heitzinger argued that together, the two interacting yet never overlapping movement registers shaped an expanded and mythically interwoven tragic topography. This topography could transpose onto the Athenian stage not only the coast near Argos, where the play is set, and the city of Argos, where the offstage action takes place, but also vast geographical regions around the Mediterranean Sea, across which the pursued maidens and Io have fled in different directions. Heitzinger

12 Jaipongan is a mixture of Balinese and Javanese dance movements.

also reflected on how changing choral formations could underline the shifting identities of the chorus, which the spectators saw turning from suppliants into threatening and potentially lethal guests, and from disoriented girls obeying their father into rebels who challenge the authority of King Pelasgus.

Of the three concluding contributions, two covered different periods in the long history of Indian dance theatre, the first re-considering classical forms of (solo) dance drama which have often been compared to imperial pantomime (Ganser), and the second analysing the dance dramas of Rabindranath Tagore (Purkayastha), whose cultural and political use of dance drama illuminated an essential aspect of ancient dance culture, namely dance politicization. Finally, performance samples (Gilliam) demonstrated the working methods of scholars, practitioners, and scholar-practitioners who are committed to transposing ancient plays into choreography and stage movement.

In *Incomplete Mimesis, or When Indian Dance Started to Narrate Stories*, Elisa Ganser (Universität Zürich, Asien-Orient-Institut) challenged the widespread assumption that traditional Indian performance genres representing plots by means of body movement were originally conceived of as forms of dance theatre. Actually, the *Nāṭyaśāstra*, a monumental treatise on theatre written during the first centuries of the common era, only distinguished between *nāṭya*, which encompassed the dramatic text and its stage performance through various theatrical arts (including dance), and *nr̥tta*, beautiful body movement devoid of narrative or mimetic function: it therefore appears that the *Nāṭyaśāstra* does not distinguish between narrative dance and theatre. It was only in the 10th century that taxonomies of performance genres came to isolate a category called *nr̥tya*, which can be conceived of as a middle-ground between the drama of *nāṭya* and the pure dance of *nr̥tta*. In his monumental commentary on the *Nāṭyaśāstra*, the Kashmiri philosopher Abhinavagupta (11th century) further conceptualized what we may today call narrative dance without adopting the new category of *nr̥tya*. In the light of this and other philosophical evidence, Ganser reflected on the theoretical problems which emerged, especially for Abhinavagupta, when new performance practices started to modify the traditional performance landscape and genre system, and with them scholars' perception of narrative dance and its mimetic purpose.¹³

On the modern side of Indian dance, Prarthana Purkayastha (Centre for Asian Theatre and Dance, Royal Holloway University of London) gave us insights into the dramaturgic and choreographic work of Nobel laureate poet, playwright and musician Rabindranath Tagore (1861-1941), a major representative of the Bengali performance culture, with a talk on *Nation, Woman and*

¹³ Cf. Ganser 2013 and Ganser (forthcoming).

Narrative in The Dance-Dramas of Tagore. Building on current postcolonial scholarship, Purkayastha examined how Tagore's dance dramas reworked subjects from traditional Indian narratives to reflect on modern concepts such as 'nation' and 'woman' through hybrid forms of dance drama and performance. This procedure, and the important role which female pupils and dancers (such as Mrinalini Sarabhai) played in it, was exemplified by three of Tagore's 'proto-feminist' dance dramas, namely *Chitrangada* (1936), *Chandalika* (1938) and *Shyama* (1939). Crucially, it was through hybrid dance forms that Tagore—in the spirit of twentieth-century Indian discourses about cultural and political nationalism, internationalism and transnationalism—staged his cultural and political resistance to the British Empire as well as to Indian nationalism and anti-colonial violence. While opening a window on dance works which are little known to classical scholars, the work of dance scholars like Purkayastha can help classical scholars enhance their awareness of the manifold political uses of dance in the Greek and Roman world,¹⁴ by demonstrating how dance and other forms of soft power contribute to political agendas.¹⁵

The fourth section, and with it the symposium, was crowned by the stunning performance given by Shelby L. Gilliam (Gardzienice Centre for Theatre Practices and Thiasos Theatre Company), an actor-dancer-singer who was also trained at the Gardzienice Company of Theatre Practices in the dance language of *cheironomiae* (Figure 2). Her demonstration *Essay in Maenadic Dance—Embodying Iconography* explored sounds and movement in maenadic rituals and provided glimpses into Thiasos' *Bacchae* (Oxford 2017, Gardzienice 2018). In the spirit of Thiasos, the trance phenomena to which Euripides' *Bacchantes* refer were studied from multiple cross-cultural perspectives; accordingly, their physical and acoustic expressions were enriched with elements such as influences from rituals of Afro-Brazilian Candomblé and Sardinian *launed-das* (woodwind instruments used as substitutes for the Greek *auloi*).¹⁶ Gilliam's impressive re-enactment relied on the notion that the maenadic dances performed on the Greek stage were inevitably inspired by maenadic cults, and

14 To mention just a few examples, one may think of the civic functions of ancient choruses, of the institutionalization and legislation regarding ancient theatre and dance, and of the ways in which Hellenistic, Republican and Imperial politicians resorted to dancing bodies for representational and propaganda purposes, etc.

15 For a quite recent example see Croft 2015.

16 In *The Bacchae*, as in other Thiasos productions, key features were the blend of intercultural music, which was the brilliant work of composer Manuel Jimenez, and the central role of the chorus, choreographed by Glen Snowden and Sasha Milavic-Davies and led by Shelby L. Gilliam herself. Thiasos' *The Bacchae* was enthusiastically received by audience and critics alike: e.g. Macintosh 2018.



FIGURE 2 Shelby L. Gilliam performs a tragic dance in the Library of Classics of the University of Vienna on June 23, 2018
PHOTOGRAPH BY THE AUTHOR

at the same time on Thiasos' re-interpretation of many iconographic and literary sources about actual and imagined maenadic performances (including the *parodos* of Euripides' *Bacchantes*). This mesmerising synergy of rhythmical, musical, verbal, postural and gestural languages embodied the often elusive notion of Greek *choreia*.

6 Conclusion

The thriving field of study concerning Greek and Roman dance exhibits distinct research focuses on choral dance in classical Greece and on Imperial pantomime. *Narratives in Motion. The Art of Dancing Stories in Antiquity and Beyond* sought to contribute to this field of study by investigating dance narrativity as an element which is shared by choral dance and pantomime and relevant to the different dance cultures of which these genres partook. To this end, the symposium tried to bridge the cultural and experiential gap which separates today's Western scholars from (past and present) narrative dance with the invaluable help of dance historians, dance practitioners engaged in research on ancient dance, and experts of those performance cultures in which narrative dance is still widely practised.

Narrative dance can hardly be considered a widespread cultural practice nor as a routine experience for today's Western audiences: the forms with which most of us are familiar are limited in both number and variety, and even attending the occasional *Nutcracker* or *Swan Lake* ballet can be a rare treat for the non-specialists. Unfamiliarity may very well be one reason why two major scholarly 'turns' of recent decades, namely the narrative and the performative turn, have missed good chances to explore dance narrativity—so much so that leading experts in intermedial narratology, in apparent oblivion of yesterday's and today's practices of dancing stories all around the world, have recently minimised the narrative potential of dance altogether.¹⁷ Classical scholarship too seems to have underestimated the subject, in spite of the fortunate circumstance that Greek and Roman evidence about arts, tastes and practices relating to dancing stories abounds: it is significant, though hardly remarked upon, that the vast majority of Greek and Latin literary sources concerning dance come from or comment on forms and practices of narrative dancing—one might think for example of the frequent remarks on dance and dancers which punctuate choral and dramatic poems of the classical period, of the scholia commenting on such remarks, of the moral and religious issues raised by Christian authors with regard to mime and pantomime, and so forth. In telling contrast, and in support of the view that scholars tend to investigate phenomena they have experienced, dance scholars and practitioners of the 18th and 19th centuries, who lived during the heyday of programmatically narrative dance genres such as the *ballet pantomime* and *ballet d'action*, were quite obsessed with the narrativity of Graeco-Roman dance and pantomime.¹⁸

Dance narrativity is a little studied yet rewarding subject which allows us to do two important things at the same time, namely deepen our understanding of Greek and Roman dance cultures and look at ancient dance across traditional generic boundaries. A selection of the contributions presented at the symposium will be published in a volume edited by the author of this report and by K. Schlapbach, tentatively entitled *Choreonarratives. Dancing Stories in Graeco-Roman Antiquity and Beyond*.

17 Ryan 2014, 25.

18 See Winter 1974, 45-67; Nordera 1992; Brandstetter 2015, 38-88; Lada-Richards 2010.

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The Dance of Priests, *Matronae*, and Philosophers: Aspects of Dance Culture in Rome and the Roman Empire

Conference Report

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Abstract

The fourteen papers delivered at a conference on Roman dance in June 2019 set about correcting the widespread idea that dance was marginal and held in low esteem in Rome. They elucidated different contexts in which dance was central, especially religion, the theatre, and private entertainments, and further topics included cultural interactions on the Italian peninsula, the diversity of practitioners, the political role of dance, and dance images in poetry. The conference showed not only that further study of Roman dance is necessary, but also that dance is a valuable tool that allows us to think about what we mean when we talk about ‘Roman’ culture.

Keywords

Roman dance – dancers – pantomime – theatre – *convivium* – religion – politics

1 Introduction

A conference entitled “The Dance of Priests, *Matronae*, and Philosophers: Aspects of Dance Culture in Rome and the Roman Empire” took place at the University of Fribourg, Switzerland, on June 18-19, 2019.

In Rome, choral dance in the civic space never had the overwhelming presence it had in the Greek *poleis*. Consequently, studies of ancient dance have always tended to focus on Greece, and the place of dance in Rome is often

portrayed as marginal (if it is studied at all).¹ This conference aimed to rectify the picture by featuring fourteen papers on dance in Roman culture from the early Republic to the empire and into late antiquity.² The papers elucidated different contexts in which dance was central, especially religion, the theatre, and private entertainments. Further topics included cultural interactions between Romans and Greeks, Etruscans, and Celts, the diversity of practitioners, the political role of dance as part of civic festivals, and dance images in poetry. The papers showed that in fact dancing was part and parcel of Roman culture. But the picture is greatly complicated by the successive integration and amalgamation of Greek culture into the Roman horizon, a point that was made by F.G. Naerebout in an article from 2009.³ In the case of dance, this development can be witnessed most clearly in the empire-wide success of pantomime, which originally came from the East but by the second century was called the “Italian style of dancing” (Athen. 1.20e) and was exported back to the Greek cities of the Roman empire.⁴ A similar amalgamation of older Greek and contemporary Roman imperial elements can be witnessed in the ancient theoretical discourse on dance, for instance when Plutarch presents a theory of the components of dance which probably originated in the Peripatos but seems informed by contemporary practices (*Quaest. conv.* 9.15).⁵ Down to the dance imagery of the Neoplatonic philosophers, the influence of imperial pantomime is palpable (e.g., Plot. 4.4.33). It is not easy to describe what exactly is ‘Roman’ about such a complex and hybrid phenomenon. The conference papers prepared the way for further discussion on this topic.

2 Conference Report

The first three papers led the way into the successive stages of the integration of Greek and Etruscan dance practices into Roman culture. Angela Bellia (“Between Magna Graecia and Rome: Dance, Performances, and Cults. An

1 For Greek dance see, e.g., Lawler 1964a and 1964b; Prudhommeau 1965; Lonsdale 1993; Naerebout 1997. For a correction of the widely shared assumption that Romans did not dance see, e.g., Alonso Fernández 2015; Alonso Fernández 2016; Alonso Fernández 2017; Naerebout 2009; Giannotta 2004; Garelli 1995; Wille 1967, 187–202. Hall 2010 usefully reminds us that a moralizing critique of dance is not foreign to Greek culture either.

2 An edited volume comprising most of the papers and some additional ones is in the making.

3 Naerebout 2009, 146f.

4 On pantomime see, e.g., Webb 2008; Hall and Wyles 2008.

5 On this passage see Schlapbach 2018, 42–73.

Archaeological Approach”) discussed visual representations of female ‘chain dancers’ in Magna Graecia as well as northern Italy. Such representations, which feature several female figures usually holding each other by their hands, are attested as early as in the 7th or 6th century BC in the South of the Italian peninsula (e.g. on a perirrhanterion from Taranto), and several examples from the imperial period featuring interlocking hands or arms are found in the North, e.g. on an altar from Pallanza, on a relief from Avignana (both first century AD), or on a relief from Angera (first or second century AD). Interestingly, the latter two can be associated with the cult of the *Matres* or *Matronae*, Celtic goddesses of fertility, and so the question is raised as to how they relate to the earlier attestations of chain dancers in funerary contexts.

Marie-Hélène Delavaud-Roux (“Aspects grecs de la danse à Rome”) argued that in spite of the ambivalent attitude of the Romans towards Greek dances, including the pyrrhic, these dances continued to thrive. The pyrrhic, originally a war dance, now overlapped with dances for entertainment (e.g. Apul. *Met.* 10.29) or Bacchic dances (Athen. 14.631ab), but competitions in the pyrrhic are also attested by inscriptions for various Greek cities.⁶ Likewise, dances for Apollo in Delphi and on Delos continued to be practiced, and other dances, such as those of Curetes and Corybantes and Bacchic dances, have a rich iconographic record from the imperial period. This presentation was accompanied by performative demonstrations, e.g. of the circular movements with the head thrown back, which presumably dominated Bacchic dances.

Sylvain Perrot examined the Greek hapax *orchestopalaistodidaktos*, a recent discovery on an Egyptian papyrus (“Un apport récent à la danse en Egypte romaine: l'*orchestopalaistodidaktos* Stephanos, P. Daris 7”). This papyrus from the third century AD, which was first published in 2011,⁷ contains the minutes of a local assembly and features a specialist of the *orchestopala*, who complains that the high priest did not pay him the agreed fee for a performance during a festival. The choreographic practice called *orchestopala* is attested in several inscriptions, among which is a third century AD epitaph from the Vatican necropolis.⁸ The paper showed that the new document not only gives an idea of the empire-wide diffusion of the *orchestopala* and informs us on the socio-economic conditions under which dancers were hired, but also adds some new insights on the relationship between music and dance.

The next paper turned to the tragic stage of the Republican period. Laura Gianvittorio-Ungar (“Choral and Anti-Choral Models in Naevius’ *Lycurgus* and

6 Ceccarelli 1998 remains the authoritative discussion.

7 Daris 2011.

8 See Slater 1990.

Ennius' *Eumenides*") argued convincingly that Naevius and Ennius were familiar with Aeschylus' *Lycurgeia* and the *Eumenides*, the main models for their own tragedies, through re-performances in South Italy, where by the third century BC a rich and deeply Hellenized theatre culture existed. Correspondences between the Greek models and their Latin adaptations can be found not only in choral imagery but probably also choral performance. Both the first play of the Aeschylean *Lycurgeia* and Naevius' *Lycurgus* refer to a bacchic chorus bellying and imitating bulls or appearing as four-footed cattle. Choral dances representing first the Erinyes and then the Eumenides can be assumed in Classical and Hellenistic performances for the beginning and the end of Aeschylus' *Eumenides*, respectively, and fragments and testimonies suggest that Ennius too resorted to dance to represent this choral transformation.

Three papers addressed the role of dance in religious contexts. Francesca Prescendi ("*Amptuare, saltare, tripudiare*: la danse en contexte dans la religion romaine") discussed Roman rituals that included dancing beyond the well-known cases of the Salian and the Arval priests (where it is usually designated by *amptuare, saltare, or tripudiare*).⁹ As had become clear in Angela Bellia's talk, dancing occurred also in rituals associated with groups of young or mature women (*virgines* or *matronae*). Although little can be ascertained about the physical shape of these dances, the presence of dancing reminds us of the physical and kinetic nature of Roman rituals. Furthermore, Prescendi examined the evidence for the connection between the *tripudium* and divination, drawing attention to the semantic openness of dance movements and their susceptibility to interpretation.

The next paper, by Ruth Webb ("Pantomime and the Gods: Presence or Representation?"), addressed the connection between dance and the divine by focusing on pantomimic representations, or 'presentification', of the gods. In his speech *On Behalf of the Dancers* (*Or.* 64, fourth century AD), Libanius compares the effect of watching a dancer to that of viewing statues (*agalmata*) of the gods, arguing that the dancer is more efficient, since he offers a performance that does not "imitate in stone" (ἐν λίθῳ μιμούμενος) but "makes present in himself" (ἐν αὐτῷ παριστάς, *Or.* 64.116). Webb contextualized this fascinating observation by adducing various passages ranging from the *Greek Anthology* to Christian authors, a fourth century-mosaic from Noheda (Spain) showing a rare image of a dancer actually performing, and recent research on classical Indian dance. She concluded by suggesting that it is the prerogative of bodily *mimēsis* to be able to 'make present'.

9 Expanding on Giannotta 2004.

René Bloch (“Tänze, die keine Tänze waren’: Widersprüchliches über den Tanz bei Philon von Alexandrien”) turned to the writings by the Jewish ‘philosopher of religion’ Philo of Alexandria (ca. 20 BC–50 AD). Noting that Philo’s oeuvre cannot easily be systematized, Bloch illustrated this assessment with the example of Philo’s complex treatment of dance. While sharply condemning things related to the body, Philo creatively integrates musical pursuits into his views. In *De Vita Mosis*, for instance, he warns of dance performances but at the same time has Moses enjoy music lessons. This variable approach is most evident in Philo’s portrayal of the *therapeutai* in *De Vita Contemplativa*, who performed choral dances during the night. Rather than considering Philo’s trip to Rome as a focal point that lends unity and coherence to his oeuvre (as a recent biography claims¹⁰), Bloch’s account of dance in Philo leaves the contradictions intact and illuminates their indebtedness to the philosophical tradition, in particular Platonism.

The next paper, by Fritz Graf (“Tanzen unter den Kaisern: eine (nicht nur) epigraphische Untersuchung”), dealt with dances that took place in the civic space and were situated at the intersection of religion and politics. Tapping into the rich epigraphic evidence for dancing in the Greek cities of the Roman empire, which starts appearing after the first Mithridatic war and especially during the Augustan period, Graf presented a number of inscriptions that illustrate the revival of traditional dance rituals after the crisis of the first century BC and also construct a cultural continuity with the archaic age. Examples included the restoration of the *synedrion* of the Curetes at Ephesus in Augustus’ time and the revival of a dance in the Ptoion in the Neronian epoch. These initiatives could involve considerable expense on the part of wealthy citizens, who paid for internationally renowned dancers to perform in competitions and who had the names of the winners recorded in honorific inscriptions, in addition to their own. Other inscriptions attest to dances accompanying sacrifices that were executed by non-elite individuals (children or slaves). The main form of dance was solo rather than choral, a token of the influence of pantomime.

The first four papers on day two focused mainly on the early imperial period. Zoa Alonso Fernández (“Dance and the Senses at the Roman *Convivium*”) set out to delineate the sensorial parameters defining the range of effects that dance could generate in the synesthetic ambiance of the *convivium*. The paper examined a number of passages from Pliny, Juvenal, and others that represent dance together with other ‘consumables’, such as food, perfumes, and sex. Rather than reiterating the negative moral and aesthetic judgements implied

10 Niehoff 2018.

by these pairings, Alonso Fernández engaged with modern methodologies that reconsider the cognitive role of the senses—including kinesthesia—in experiencing performances. Seen from this perspective, the dancing of the *convivium* allows us to get a better sense of the rich and complex sensory impressions that characterize the Roman dinner-party, and the mention of manifold concomitant sensory stimuli helps us in turn to appreciate how deeply affecting dance could be in Roman culture at large, despite its ostensible denigration in the texts.

Eleonora Rocconi (“The Orator and the Dancer: Conceptualizing Gesture in Roman Performance”) revisited the frequent comparison between actor and dancer in Cicero and Quintilian. The paper showed that there is an evolution between these two discussions, reflecting among other things the fact that pantomime became extremely popular from the Augustan age onward. The orator and the pantomime dancer represented two paradigmatic, competing ways of expressing emotions via bodily performance. While the physical means differed—the pantomime dancer, for instance, could not use facial expression because of his mask—and the standards of decorum varied between the orator and the dancer, they both relied on well-established affective vocabularies of gestures based on the cultural conventions of their environment. Interestingly, the dancer’s hand-gestures were seen as closely related to keywords in the source text, an aspect that Helen Slaney also discussed in her paper (“The Kinetic Vocabulary of Tragedy”). Comparing passages from Senecan drama with Euripides’ *Medea* and *Bacchae*, Slaney examined the transposition of scenarios from tragedy into the alternative medium of Roman tragic pantomime, which was a major influence on Seneca (e.g. Slaney 2013; Zanobi 2014). Arguing that pantomime utilized a set of formal relationships between the soloist’s choreography and the other semiotic components comprising the art-form, in particular the sung libretto, Slaney showed that single words could serve as focal points, around which the dynamic tension necessary for a dramatic performance was generated. Her paper drew attention to the great variety of words indicating bodily movement and illustrated how they can point to ways through which integral elements of tragedy such as conflict and character may be realized kinetically through the body of the protagonist.

Lauren Curtis (“Roman Rhythms: Music, Dance, and Imperial Ethics”) tackled a short but illuminating passage from Suetonius’ *Life of Augustus* and teased out its political implications. In *Life of Augustus* 68, the juvenile Octavian is universally mocked by the crowd at the theatre, when the sounds and gestures of the *cinaedus* onstage playing his circular hand-drum (*tympanizante*) are compared to the young politician’s control over the globe (*orbem ... temperat*). The scene shows the Roman *populus* drawing a clear and sophisticated connection

between the language of music and dance and imperial power, a connection which is well known in ancient Greece, but has been little studied in Roman culture.¹¹ Contextualizing this passage with selected examples from Republican and Augustan historical and literary sources, Curtis skilfully elaborated on the relationship between the language of harmonious sound and choreographed movement (especially verbs such as *tempero* and *modulor*), and the ethics of Romans' control over the self and the wider world.

The last two papers moved forward into late antiquity, addressing dance as a practice and as a poetic motif in this period. Raffaella Viccei ("Performative Issues of Pantomime and Theatrical Spaces: *Alcestis Barcinonensis* and Archaeological Evidence") discussed the so-called *Alcestis Barcinonensis* (4th/early 5th century AD), one of the most important papyrus finds of the 20th century.¹² Her analysis of the 122 Latin hexameters of this poem revealed performative issues which can be explained with the influence of imperial pantomime. Drawing on archaeological evidence, she addressed the possible relationship between *schēmata* that are highlighted in the text and theatrical spaces where *schēmata* were shown to the audience—not only the places where *Alcestis* could have been staged in the late Imperial Age (theatres, *ōideia*, spaces of a *domus* refunctionalized for 'theatrical' purposes), but also those where *Alcestis* has been re-performed recently, namely a classroom at the University of Florence (1999) and the 'Museo sensibile' constituted by the archaeological remains of the Roman theatre at Milan (2009).

The final paper, by Henriette Harich-Schwarzbauer ("Das Übrige mögen die Dichter singen'. Tanz in der lateinischen Dichtung der Spätantike"), showcased the rich and diverse dance imagery in late antique Latin poetry. The dance motif is used, for instance, as a token of a festive atmosphere, as a polyvalent metaphor, or as a metapoetic element. Equally interesting are the 'gaps', i.e. places where generic conventions call for a mention of dance but it is left out. Harich-Schwarzbauer's discussion gave special attention to the evolving portrayal of Salome (Juvenius, Prudentius), to dance movements suggesting sexual fulfilment (Reposian), and to mythical and cosmic dances in Claudian's wedding songs. It offered a vivid illustration of the productivity of the dance motif despite the philosophical legacy of a moralizing critique, on which Christian authors expanded in the same period.

11 For Greece see, e.g., Olsen forthcoming; Kurke 2012; Wilson 2003.

12 See the new edition and thorough discussion in Viccei 2019.

3 Conclusions

The conference brought to the fore some simple questions that call for further discussion: if dancing happens in Rome, or in the Roman empire, does this fact alone already connote a 'Roman' character? And if such a view is too simplistic, what other elements may contribute to its understanding as 'Roman'? In other words, what is at stake in the enquiry into Roman dance is not just dance as a Roman practice (or not), but also the very concept of 'Romanness' itself. The aforementioned passage from Athenaeus on pantomime as the "Italian style of dancing" (see above, p. 191) is interesting in that it acknowledges Rome, the Capital, as the 'epitome' of a cosmopolitan world, and pantomime as its universal language (Athen. 1.20c-e).¹³ On this view, Rome is defined by its inclusiveness and diversity, its capacity to absorb and integrate a wealth of cultures and traditions. These qualities certainly define Rome to some extent even during the Republic. The question of what is Roman, and what is not, has been very much discussed in relation to other cultural practices that are part and parcel of Roman culture, including philosophy, rhetoric, mythology, and literature as a whole, but it has not yet been sufficiently addressed in relation to dance. This conference has shown the rich potential of this question, and has opened the way into further research on the time-honored place of dance in Roman culture and its extraordinary flourishing in the imperial period, both as a practice and a discourse.¹⁴

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¹³ See Schlapbach, forthcoming.

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New Music in New York

Notes on a Recent Herakles, Rescored

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Abstract

The article reviews a production of Euripides' *Herakles* mounted by Barnard Columbia Ancient Drama, with an historically informed vocal and *aulos* score. I discuss aspects of the treatment of music in both the play and the performance, and I assess the production in light of recent approaches to the musical reconstruction of Euripidean tragedy.

Keywords

music of tragedy – Euripidean music – modern stagings of tragedy – historically informed reconstruction of ancient music – *aulos*

This original-language production of Euripides' *Herakles*,¹ billed on the Barnard Columbia Ancient Drama website as “the first modern staging of a Greek tragedy with a fully reconstructed score on the historic double-pipes or *aulos*”, represents a major scholarly and artistic achievement, one that merits the attention of all those interested in ancient Greek music and drama. A professionally recorded video of the production is now available on YouTube.² It is well worth watching.

1 *Herakles*, directed by Caleb Simone; vocal score by Anna Conser; *aulos* score and performance by Callum Armstrong. Performed by Barnard Columbia Ancient Drama in the original ancient Greek (with English projections). 90 minutes. April 4–6, 2019. Minor Latham Playhouse, Barnard College, New York City.

2 <https://www.youtube.com/watch?v=gM4sYJ7hdqg>.



FIGURE 1 Callum Armstrong playing pipes made by Robin Howell

PHOTOGRAPH: © PAMELA SISSON

I was fortunate to attend a live performance on April 5, 2019, though I must confess to some misgivings going in. While the novelty and ambition of the event were exciting, I worried that I might be in for a particularly academic strain of what Peter Brook called “deadly theatre”, historically well-informed yet spiritless (and thus historically inauthentic) revivalism aimed at impressing the “scholar [who] confuses a sort of intellectual satisfaction with the true experience for which he craves” (1968, 10)—in short, an evening of dull if ostensibly “correct” musical theater.

By the first notes of the *parodos*, it was clear that my worries were unfounded. This *Herakles* was revival done right: a reimagining of Euripidean tragedy and its music deeply informed by the latest and most authoritative research on ancient Greek music and drama, yet also, and just as importantly, a creative, vital, emotionally powerful piece of theater designed to move the general audience as much as to impress the scholar. Under the inspired direction of Caleb Simone, the music was in one sense the star of the show, and the engaging vocal score by Anna Conser (like Simone, a Columbia graduate student specializing in ancient Greek music), with *aulos* parts composed and played by Callum Armstrong (see Figure 1), the expert piper engaged by BCAD for this production, ensured that it lived up to its top billing. Yet the music neither overwhelmed nor distracted from the drama unfolding on the stage—the play

was most definitely the thing. Singing and piping were seamlessly integrated into the theatrical experience, enhancing moods and feelings and creating meaning in conjunction with the text and its enactment by chorus and actors.

Such integration is important to the performance of the *Herakles*. Not only is it among Euripides' most melodically rich works, with relatively high percentages of choral and mixed choral and actor's song, but its musical structure is notably responsive to the text and action, a feature that Simone and his collaborators successfully highlighted throughout. Strophic choral songs (see Figure 2), in mostly iambic and aeolic meters, dominate the first half of the play, as the chorus first yearns for and then too precipitously celebrates Heracles' homecoming and the salvation it promises, while the entirely astrophic singing of the second half, predominantly in dochmiacs, reflects, at the level of musical form, the utter reversal of these hopes for cohesion following Heracles' psychotic break and his killing of his family. These changes in mood and form are nicely matched by Conser and Armstrong with a perceptible change in style, as relatively restrained diatonic melodies and stately tempi suggestive of *archaia mousikē* give way (most dramatically in the frenzied fourth stasimon) to agitated, percussive rhythms and an insistent chromaticism evocative of the New Music.

The *aulos* plays a crucial role in the representation of the breakdown of hero and house. As Simone writes in the program notes, "the instrument of Lyssa's madness is precisely the *aulos* that would have accompanied the rest of the play's music and sound effects. Lyssa's metaphors for her powers can all be linked to the sound imagery of the *aulos*". Simone's staging of the maddening of Heracles, the scenic highpoint of the play, was a brilliantly conceived and executed expression of this meta-theatrical and meta-musical reading of Euripides' text, evoking through sound and spectacle themes of possession, compulsion, and doubling associated with *auloi*. As the initially reluctant Lyssa (an excellent Yilin Liu, see Figure 3), compelled into action by Iris (Darcy Krasne), chanted her spell of possession over Heracles, she herself seemed possessed by the messenger goddess, whose serpentine gestures Lyssa uncannily doubled, as if an instrument controlled by a player. Her voice, too, was subtly manipulated with live reverb and echo by the sound designer (Matt Rocker), which gave it an eerie resonance and a hint of 'double tracking' that recalled the sound of the *aulos* and created the unsettling impression that the voice both was and was not her own. Though these special effects were of course inauthentic, more Lynchian than Euripidean, they perfectly suited the eldritch scene. Beneath Lyssa's incantation swelled the *aulos* itself: Armstrong played dissonantly undulating drones and menacing glissandi that put me in mind of Ligeti's anxious sonic textures and Mica Levi's vertiginously swooping film



FIGURE 2 Chorus in action

PHOTOGRAPH: © PAMELA SISSON

scores even as they alluded to the virtuoso effects conceivably produced by New Music auletes of Euripides' day.

After Lyssa's spell, Armstrong's playing grew freer and more intense in a musical interlude that conjured up the violence now taking place offstage. He pushed his instrument—multimodal theater pipes built by Robin Howell—to dynamic and expressive extremes in cresting waves of sound, furious trills,



FIGURE 3 Lyssa (Yilin Liu) chanting her spell, with Iris (Darcy Krasne)

PHOTOGRAPH: © PAMELA SISSON

and staccato chordal bursts. (Digital reverb and echo were again judiciously mixed in to thicken the wall-of-sound effect.) Once more, the music seemed almost jarringly contemporary, but appropriately so. I felt, I would like to think, something of the awe a fifth-century theatergoer did when listening to the daring innovations of Pronomus and other avant-garde auletes of the later fifth century, an effect Simone and Armstrong no doubt intended.³

Similarly, Conser's vocal score sounded both genuinely ancient and bracingly modern, 'original' in every sense of the word. It is plausibly Euripidean from beginning to end, true to the forms, principles, and practices of fifth-century *mousikē* as far as they can be reasonably reconstructed. Melodic phrases follow the accentual contours of the verse (no unaccented syllable is pitched higher than the highest accented one); circumflex-accented syllables are frequently set to two (descending) notes (though extravagant melisms of the kind for which Aristophanes' Aeschylus criticizes Euripides are absent, perhaps regrettably so). Particularly notable is Conser's careful coordination of melody and word accent in the settings of the parodos and strophic stasima. She repeats the same melodies in corresponding strophes and antistrophes,

3 Lyssa's incantation, followed by the *aulos* interlude and the beginning of the fourth stasimon, may be heard here: audio file 1.

but constructs them in such a way as to accommodate the differing accentual patterns in each of the two sections. While it is debatable whether Euripides followed this procedure in the *Herakles* (cf. e.g. Dion. Hal. *Comp.* 11), the aesthetic results achieved in these songs were indisputably successful: the melodies remained energetic and expressive despite their verbal constraints.

Conser's *melopoiia* is closely attuned to the sense of the poetry as well. There is occasional word painting, a device that the notated *Orestes* fragment suggests Euripides may have employed.⁴ A bold instance comes at the very beginning of the parodos, when the chorus sings the first two syllables of ὑψόροφα ("high-roofed") in an upward-leaping octave.⁵ Conser also manipulates melodic and rhythmic motifs to underline verbal and thematic continuities and contrasts across the play. The phrase γέρων ἀοιδός ("aged singer") is set to the same falling-and-rising note sequence (c-a-e-a-c) when it appears in the somber parodos and then (twice) again in the second stasimon, though figure and phrase sound transformed in the musically brighter context of the latter song, which has the chorus hoping to transcend old age through ceaseless music-making. The sequence later reappears in various permutations throughout the kommos and in Amphitryon's monodic interchange with Theseus, where it becomes once more the expression of an aged singer's heavy grief.⁶

In this monody and elsewhere, Armstrong provided steady tonal and rhythmic support for the singing, while often adding countermelodies and harmonic embellishments that complemented and enriched Conser's score. The cast members, mostly undergraduate and graduate students, deserve the highest praise for their acting and singing, which far exceeded the typical standards of a student production. Cat Lambert delivered an especially moving performance in the dramatically and musically demanding role of Amphitryon.

The BCAD *Herakles* stands tall alongside several recent performances of reconstructed Euripidean music that have, in variously novel ways, successfully balanced scholarly authority and compositional creativity, historical authenticity and popular entertainment, amateur enthusiasm and skilled musicianship. I refer to Armand D'Angour's realization of the choral *Orestes* fragment conducted by Tosca Lynch with piper Barnaby Brown at the Ashmolean Museum in 2017; D'Angour's 2019 collaboration with Brown on an open-air production of *Alcestris* at Bradfield College; and John Franklin's ingenious staging of *Helen* with 'new ancient' music both learnedly composed and effortlessly catchy at the University of Vermont in 2018. Like those, this production

4 See D'Angour 2018.

5 The strophe and part of the antistrophe of the parodos may be heard here: audio file 2.

6 The beginning of the kommos may be heard here: audio file 3.

vividly demonstrates that the historically informed reconstruction of ancient music can offer much of intellectual value to a wide range of scholars (not only specialists in Greek and Roman music), while also bringing pleasure and fascination to the non-academic world at large. Simone, Conser, Armstrong, and the BCAD players have done exemplary, invigorating work. May there be much more like it in years to come.



There is an online companion to the print version which contains audio recordings of the texts given in the article. Sound files have been deposited on https://brill.figshare.com/articles/GRMS_008_01/11836992.

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Book Reviews



M. Raffa, *Theophrastus of Eresus: Commentary Volume 9.1. Sources on Music* (Texts 714-726c). Series: Philosophia antiqua. Volume: 149. Leiden, Brill 2018. x, 135 pp. ISBN: 978-90-04-36228-4

This book belongs to the series of commentaries planned since the publication of the two-volume collection of Theophrastus' texts,¹ with the aim of analyzing in more detail the different areas of thought attested to in his surviving material. Within this corpus, the 'fragments'² dealing with music are a small yet fascinating part (texts 714-726c), comprising sixteen testimonies: such valuable material can now be properly appreciated thanks to this dense and accurate commentary of Massimo Raffa (hereafter R.), one of the finest young scholars in the field of ancient Greek music theory.

The book is organized into four main chapters: 1) Introduction; 2) The Sources; 3) Titles of Books; 4) The Texts. Three indexes complete the volume: Index of Greek, Latin, and Arabic Words; Index of Ancient Names, Places, Authors, and Passages Cited; Index of Subjects.

To begin with, the clear and rich introduction contextualizes Theophrastus' ideas on musical matters within a broader picture, introducing the readers not acquainted with the topic to the intricacies and subtleties of Greek theoretical speculations on melodies. The approach taken by R. to so many and different aspects of ancient music theory is extremely revealing, since it focuses on the item that appears to have been one of the main concerns of Theophrastus' musical investigation: the sound. Musical sounds were taken into account by ancient theoretical speculation both as the object of harmonic and acoustic inquiries (the former describing the regular and repeated patterns underlying melodic sequences, the latter explaining the mechanisms of musical production and perception), and as the audible expression of the soul's affections, two

¹ Fortenbaugh et al. 1992.

² Most of these texts are indirect testimonies, hence we cannot properly talk about fragments.

areas of concern summarized by R. under the labels “sounds outside” (2-9) and “sounds inside” (9-16). In these pages, R. not only offers an excellent synthesis of the most important issues in the field, providing readers with substantial information on the musical debates in Theophrastus’ time. He also gives his own interpretation of some controversial issues (such as the much-debated Damonian testimony on the connection between the soul’s movement and the resulting melodies and dances, see esp. 10-13, correctly identified as a forerunner of Theophrastus’ ideas on music and the soul, cf. below),³ as well as clarifications of some common, albeit misleading, beliefs (like the widespread idea that a mathematical approach to harmonics was already part of the earlier Pythagorean doctrine, see 2-7). The last part of this introductory chapter goes to the heart of the matter (16-21), discussing Theophrastus’ thoughts on music in relation to its context and comparing T. with Aristoxenus, his former competitor for the succession of the Peripatos.⁴ The contiguity between some key notions developed by these two philosophers is succinctly emphasized in the very last lines of R.’s introduction: “We might conclude, therefore, that both Aristoxenus and Theophrastus saw the essence of music and musical sound in movement, the former basing his thought on the κίνησις τῆς φωνῆς, the latter on the κίνησις τῆς ψυχῆς” (21, cf. 86). We may wonder how close the link is between these symmetrical usages of the term, on the one hand, and the Aristotelian concept of *kinēsis* in natural science, on the other hand, a topic that deserves to be further explored: a systematic treatment of the early Peripatetic reflections on music that can detect the sharing and persistence of notions attributable to Aristotle’s legacy is still needed.⁵

In ch. 2, R. lists the sources that handed down Theophrastus’ texts in chronological order and gives useful information on the works within which they appear, preparing the ground for the detailed commentary in ch. 4. Ch. 3 focuses on text 714, that is, on the titles of Theophrastus’ books concerning music as they are reported in Diogenes Laertius’ *Lives*. In this brief chapter, R. discusses the inconsistencies among the titles and speculates about their

3 Damon, fr. 37 B 6 Diels-Kranz = test. C1 Wallace: “The followers of Damon the Athenian have not badly said that songs and dances must result when the soul is moved in certain ways: souls that are fair and characteristic of free men create songs and dances of the same kind, while the opposite create the opposite” (transl. Wallace).

4 So we are told by Suda α 3927. Despite the fact that Theophrastus never mentions Aristoxenus, they certainly shared an interest in music, as ancient sources seem to have been well aware (cf. text 715, where Plutarch pictures the two philosophers as guest speakers on musical matters in a fictional symposium).

5 On Aristoxenus and Aristotle, cf. Bélis 1986 and Barker 2007; an excellent starting point, albeit limited to Aristotle’s historiographical paradigm, is Tocco 2019.

original contents (acknowledging the difficulties in formulating conclusive hypotheses), finally adding some remarks on the possible attribution of the surviving material to specific works.

In ch. 4 R. focuses on texts, developing his commentary in a systematic way throughout the entire chapter (i.e., he discusses the context, the contents and, if necessary, any textual problems of each text). The sources are grouped in categories, based on their belonging to a specific subject: harmonics (texts 715, 716, 717); musicians (718); music and the soul (719A, 719B, 720-721A, 721B, 722-725); music and the human body (716a-c).⁶ The longest and most extensively analyzed text is 716 (45-67), an excerpt from Book 2 of Theophrastus' *On Music* quoted by Porphyry's *Commentary on Ptolemy's Harmonics* 1.3, in a section discussing the causes of variations in pitch.⁷ The most important contribution of these pages is the new interpretation of this fragment, as far as the purpose of Theophrastus' argument is concerned. According to R., in fact, the so-called 'qualitative' conception of sounds—that may be assumed at the end of the long reasoning during which the philosopher rejects the number-based conception of pitches—is incidental, since the issue of 'pitch variations' was not Theophrastus', but Porphyry's main concern: rather, R. assumes that the original context of the fragment focused on how the soul translates its movement into melody (60: "the subject matter [of text 716] is the movement which takes place in the soul and produces melody"). Thus also the *ιδιότης* ('peculiarity') that Theophrastus considers responsible for the differences in pitches (and, maybe, for other kinds of distinctions too) has to do with the soul's behavior when producing a melody: this is why, R. says, "Theophrastus' discourse seems to belong more to the field of psychology than to that of acoustics or harmonics" (61).

This interpretation is supported by the fact that a substantial part of the surviving texts on music (from 719A to 725, cf. 80-113) discuss the relationship between music and the soul, especially in connection with emotions, capable of affecting the voice in various ways (see esp. text 719A). This is another subject to which Theophrastus devoted a great deal of attention because of his Aristotelian background: indeed he followed his master in tying delivery to emotions⁸ and in attributing primary importance to the voice's pitch (and the

6 In this short review, I cannot summarize all the interesting comments on Theophrastus' texts contained in this book, so I will focus only on the most relevant (in my opinion).

7 Here, R. benefits from his expertise on Porphyry's work discussing in detail all the emendations accepted in his recent edition of this text (see Raffa 2016).

8 In Aristotle's *Rhetorics* (*Rhet.* 3.1403b-1404a, cf. Konstan 2006) we are told that poetic and rhetorical deliveries were both acoustic experiences: hence the need to pay attention to the 'voice' and its melodic components.

bodily movement too) during rhetorical speeches in order to persuade the audience (cf. text 712).⁹ He also called hearing the most emotional (παθητικωτάτη) of all the senses (text 293).¹⁰ So if we broaden our perspective and also take into account Theophrastus' texts on rhetoric, we may easily conclude that his interest in performance (rightly emphasized by R. when commenting on text 718, see 72) extended not only to music, as we know that he wrote an independent treatment of the issue of ὑπόκρισις in a treatise titled *On Delivery* (Diog. Laert. 5.48), where he perhaps examined voices and motions with regard to any kind of performer.¹¹

To conclude: it is clear that, in Theophrastus' sources on music, the topics at issue are not only strictly 'technical', but encompass several aspects of ancient Greek thought and culture. Therefore we can only welcome the publication of this excellent commentary: essential reading for anyone with an interest in ancient music, philosophy or, more generally, the history of ideas.

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9 Athanasius, *Prefatory Remarks to Hermogenes' On Issues*, *RhGr* vol. 14, 177.3-8 Rabe (transl. Fortenbaugh et al. 1992): "However, also Theophrastus the philosopher says in like manner (i.e., in a way similar to Demosthenes) that delivery is for an orator the greatest (help) in regard to persuasion. (He says this) referring to the principles and the emotions of the soul and the knowledge of these, so that the movement of the body and the pitch of the voice are in harmony with the entire science".

10 Plut. *De rect. rat. aud.* 37f-38a: Οὐκ ἂν ἀηδῶς δ' οἶμαί σε προακοῦσαι περὶ τῆς ἀκουστικῆς αἰσθήσεως, ἣν ὁ Θεόφραστος παθητικωτάτην εἶναι φησι πασῶν.

11 According to Fortenbaugh (2003, 271), the treatise *On Delivery* "was an inclusive work that discussed voices and motions appropriate not only to orators, but also to musicians, actors, and rhapsodists".

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Hicks, A. (2017). *Composing the World. Harmony in the Medieval Platonic Cosmos*. New York: Oxford University Press. xix + 321 pp., ISBN 978 0 19 065820 5.

The main objective of this volume is highly innovative and stimulating. Hicks declares it at the very beginning: “it offers a new intellectual history of the role of harmony in medieval cosmological discourse, focused primarily on the twelfth-century reception and development of ancient and late-ancient Platonism, as transmitted by Calcidius, Macrobius, Martianus Capella, and Boethius. Its central argument—which synthesizes material from domains usually treated separately, including philosophy, logic, cosmology, music theory, and literature—affirms music theory’s foundational and often normative role within the development of medieval cosmological models, at both micro- and macrocosmic levels: the microcosmic harmonies that govern the moral, physical, and psychic equilibrium of the human and the macrocosmic harmonies that ensure cosmological perfection” (5).

It is a very ambitious plan, and Hicks uses an extensive source apparatus—including manuscripts—from a variety of disciplines, which nevertheless give a unified configuration of macrocosm and microcosm-harmony.

One of the original aspects of Hick’s research is that it emphasizes the role of musical categories and sources in the definition of the harmonic nature of the cosmos, and of the human being inside it, both conceptually and lexically. This is clear from the very organization of the book and, in particular, from the titles of its sections. Part one (*The Framework*) includes two sections (*Harmonizing the World: Natural Philosophy and Order*; *Knowing the World: Music, Mathematics and Physics*) dedicated to the work of philosophers (*philosophi*), philosophers of nature (*physici*), mathematicians (*mathematici*), musical theorists (*musici*) (sometimes different faces of the same author). Their efforts contributed towards the creation of a musical image of the world and a key to interpret it. Part Two (*The Particulars*) consists of three sections (*Composing the Human. Harmonies of the Microcosm*; *Hearing the World: Sonic Materialism*; *Composing the Cosmic: Harmonies of the Macrocosm*) and a *Postlude* (*The Musical Aesthetics of a World So Composed*), where the lexicon of harmony is applied to various aspects of the macrocosm and the microcosm, including some of those traditionally considered as the hardest to interpret, linked for instance to the ‘music of the spheres’.

The idea of a world of perfection and harmony, to be comprehended through the liberal arts of the *quadrivium*, particularly music, and the awareness of its aesthetic and theological implications—beauty and harmony as a way to reach their Creator—resulted from a variety of traditions (Pythagorean, Platonic, Neoplatonic) which were already strictly interconnected in late

Antiquity. There is no doubt that it was through these traditions that the idea of music—based on numbers—as the key to comprehend the world reached the Middle Ages and beyond, with the consequent conceptual and lexical instruments connected to the *musica disciplina*.

Hicks' work is too complex and richly documented for us to go into further detail here. It outlines a complex historical and thematic framework, with aspects which the author links with contemporary philosophical and scientific perspectives, sometimes neglecting to highlight their profoundly different contexts.

Hicks' essay is a very accurate study of *Harmony in the Medieval Platonic Cosmos*, and is going to become a must for future researchers in a field that includes a number of disciplines with different epistemological statutes. The following remarks are just meant to be 'food for thought'.

To describe Abelard as "the staunch nominalist of the twelfth century" (43) seems a little curt, and we found the use of the phrase "mind-body" a little ambiguous in that in a contemporary context it has a very different meaning (50). On the same page, *anima* is also translated as "soul".

Unfortunately, in the long exposition (115-29) of the 12th century discussions on the soul's structure (bipartite/Aristotelian, tripartite/Platonic), John Damascene is not quoted alongside Calcidius, Macrobius, and Nemesius of Emesa. Damascene's *De fide orthodoxa* was translated into Latin by Burgundio of Pisa in the 12th century, like *De natura hominis* by Nemesius, and contributed significantly to the dissemination of Platonic and Aristotelian doctrines among Latin thinkers.

When discussing *musica mundana* as based on numbers, Hicks does not devote enough space to the doctrine of exemplarism (only mentioned on p. 258), and while he correctly recalls its philosophical roots—Plato (*Timaeus*) and Boethius (*Consolatio*)—there is no reference to the Bible. Exemplarism is one of the foundations of the medieval vision of the world, resulting, among others, from Augustine's Christian interpretation of Plato's doctrine on ideas as identified with God's mind (*De div. quaest.* 83, q. 46). The roots of the doctrine, however, run far deeper, in the Holy Scriptures—Sap. 11, 20: *omnia in mensura, et numero, et pondere disposuisti*, just to quote an example. Harmony springs from ideas, from the wisdom of God. It is precisely because of this that Boethius stated "numerus est praecipuum in animo Conditoris exemplar" (*De instit. arith.* 1, 2).

Inspired by this Biblical doctrine—as well as by the Platonic philosophers of Antiquity and Late Antiquity—12th century authors (and their Christian sources) reflected on beauty and harmony in macrocosm and microcosm.

Without this context, their “cosmological aesthetics” would not be possible. If they gave music a central role in the comprehension of the universe, it was because they deemed the universe ruled by the wisdom of God.

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